# THE IRON AGE

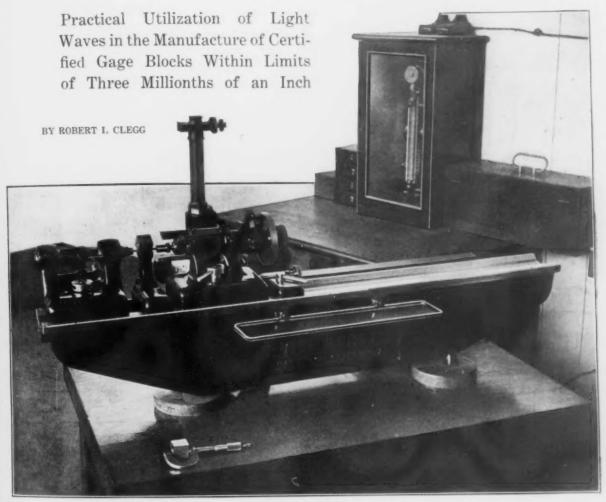
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# Measuring to the Millionth Part of an Inch



AGE blocks of a high degree of accuracy have become well known during the past few years. For war work they were in great demand. Supplies were commandeered by the War Department, and this naturally turned the attention of many to their larger production. Among other results, size blocks having absolutely flat and parallel measuring surfaces were produced by Wm. E. Hoke, St. Louis. Later he enjoyed the facilities of the U.S. Bureau of Standards and then, as a Major of the Ordnance Department, U. S. A., was

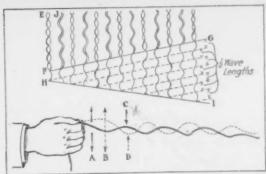


Fig. 1—Pratt & Whitney measuring machine, equipped with microscope for reading a finely graduated bar extending along the rear of the apparatus. It is used in preliminary tests of precision gage blocks made by the Hoke system. The machine is designed so that the part measured is held under pressure regardless of the operator.

Fig. 2—Wave motion in a rope, compared with light waves and interference caused by reflection. Movement A causes wave motion C. Movement B causes loop D, an interference. In upper drawing, light waves at E pass through plate F G to surface H I and are reflected back, interference resulting. The reverse is true at J. Through a glass flat straight or curved bands show as the light operates

enabled to make further progress in this precision work at Washington. These blocks are now made within limits of three milionths of an inch and, in fact, most of them show less error than a millionth.

The Pratt & Whitney Co., Harftord, Conn., possesses the manufacturing rights under the Hoke system and furnishes each set of blocks with a signed certificate from the U.S. Bureau of Standards stating the actual errors of every block, the blocks having serial numbers upon them for such identification.

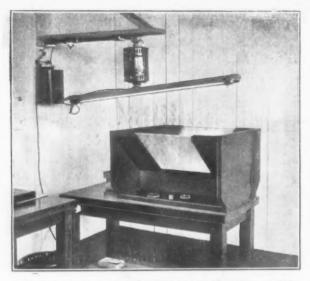


Fig. 3—Apparatus for optical measurements, making use of the principles diagrammed in Fig. 2. It consists of a Cooper-Hewitt light, having under it and mounted on a bench, a frame with sheets of ground glass to diffuse the rays, two optical flats and the standards against which the other blocks are to be measured. Two testers can work at once at this bench.

In brief, the blocks are glass-hard steel about 1-in. square with a 1/4-in. hole through the center. They are of a special alloy steel selected for wearing qualities and are thoroughly seasoned and finely fin-The counterished. sunk hole through the blocks permits the stacking of them. They may thus be assembled and held in place by a 1/4-in. rod and screws fitting the chamfered holes.

Of course, the blocks when "wrung" together stick with a vigorous grip owing to their close contact and other conditions, of which something will be said

later. The subject is one which has long been of scientific interest.

#### Getting Millionths into Manufacturing

Obviously, the experts of the Pratt & Whitney Co. must have a reliable means of measuring their work while it is in progress at the shops in Hartford. A trip to the Bureau of Standards headquarters in Washington is out of the question during the several stages of the lapping process, though quite in order when the blocks are to pass final inspection by the U. S. authorities and be formally certified by them as to the true accuracy limits of length and surface flatness. Not even having at hand complete and approved sets of standard sizes will satisfy, unless there are conveniently available some ready and absolutely dependable means of making comparisons and establishing limits of error to definite dimensions.

Errors of millionths of an inch are frequently thought of today in the same way that at one time were thousandths, and later ten thousandths. To split a sixty-fourth was once an accomplishment that under the scale and caliper standards of excellence ranked very high. And with no more than the same instruments, the undertaking now, as then, deserves admiration. Quartering and halving the thousandths of the micrometer was equally a feat that had its skeptics when it came to applying practically these minute divisions in the work of machine shops.

#### Some Expedients in Fine Measuring

While the micrometer was revolutionizing the practice of manufacturing plants and making the American system of interchangeable parts of machines and machine products possible in watch, sewing machine and other products, advancement was also maintained in precision measuring devices employing the microscope over nicely graduated scales, the flow of liquids through thermometer-like tubes having small openings in them, and other expedients. These devices gave a decided increase to the available capacity for fine measurements and in their connection the inch became subdivided to an elaboration of hundred-thousandths or even shorter shares.

Mechanically, it seemed that the path marked out by Whitworth, Bond, Beale and their co-workers and followers had reached the working limit, when out of a clear sky, nearly twenty years ago, there came the report of a simple use of optical appliances that made previous efforts seem almost elementary.

#### Light Provides Standard Lengths

Professor Albert Michelson, of Chicago, applied the peculiarities of light waves to the solution of the problem. His method has been found so practical that it often is

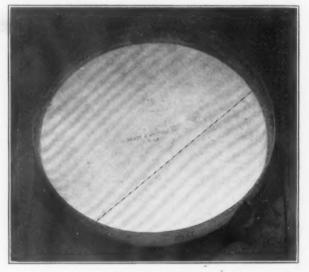


Fig. 4—Light interference bands as they appeared between a 5-in. diameter flat and plate. A line has been drawn across the photograph tangent to one of the bands. It will be noted that the line does not cut through to the further edge of the next one. This indicates that the plate is flat to within one-millionth of a wave length or about ten-millionths of an inch.

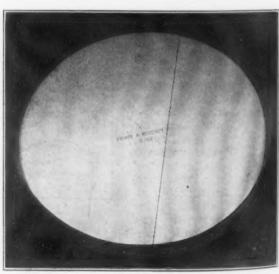


Fig. 5—This is the same plate as in Fig. 4, but it has the wedge of air between the glass and the plate very much reduced in thickness. This decrease in the depth of the air space greatly increases the distance between the interference fringes. A line drawn across the photograph about tangent to one fringe confirms the previous showing Distance between the bands does not affect the reading.

said that if the bar and scale standards of length were all destroyed, the records established by Prof. Michelson would enable the accurate reproduction of them. But his method while determining length with great accuracy, is not so handily useful for the examination of flatness, and in neither case is it so applicable to the workman's use as would be desirable when lapping operations are under way, and tests are necessarily frequent and rapid.

#### Peters' Method Adapted to Shop Needs

The present plan was proposed by C. G. Peters of the United States Bureau of Standards and is also of an optical character, but it is as simple as it is successful.

Everyone is familiar with the rings formed when a stone is flung into a pond. Let two stones be dropped into the water at the same time and a yard or so apart, then two sets of rings start radiating outward and, where they meet, these little waves interfere with each other, increasing or diminishing the wave effect according to the stage of the vibration period at the meeting points.

Exactly the same thing occurs when one end of a length of rope is swung up and down by the hand. If the movement of the hand keeps the right sort of time with the waves or loops as they run along the length of the rope and "whip" out at the end, there will be a constant succession of waves, but if the swing up and down of the hand is as regularly varied to send an alternative series of similar loops at a different flow to the others, there will at once be an interference. the waves acting against each other.

The action of light waves is not unlike that

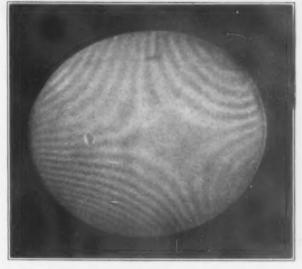


Fig. 6—These bands result from the test of an unfinished plate which was not flat. A comparison of this illustration with that of Fig. 4 shows how readily uneven surfaces are detected. The plate seen here is nevertheless within a tenth of a thousandth of being flat. In Fig. 4 the bands represent contours as on a map, each interval being equal to one light wave.

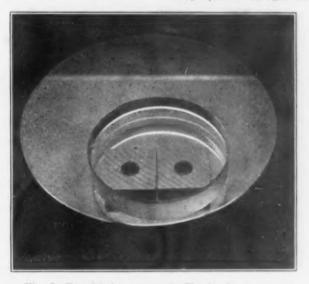


Fig. 7—Two blocks compared. The bands on one are continuous to those on the other, and prove that the blocks are within one-millionth of an inch of the same size. If one block were exactly a wave length different in height from the other, or there were exactly any number of even wave lengths between the two, the bands would show identically.

of the rope in its vibrations. The passage of the loops along the length of rope may be compared to the direction and velocity of the light waves while the hills and valleys of the loops may be looked upon as akin to the amplitude of the waves.

#### Wave Lengths Made Visible

A wave of light has interference when it is thrown back upon itself by reflection and when, as in the case of the vibrating rope, one set of vibrations has a differently timed application to another set, though alike in all respects. Thin films of oil and

soap bubbles are common examples of the play of light under such circumstances and these strips of black alternated with colored spaces are known as interference bands or fringes.

A couple of glass "flats," as true optical planes are called in shop talk, are simply round pieces of glass ground to accurately leveled surfaces. One of these flats placed on the other with the level faces in contact shows, on looking down through the upper surfaces to the lower one, a row of bands. In the daylight is seen a series of miniature rainbows—colored strips side by side, fringes of red and violet showing. With other sources of light than the sun other effects are obtainable. A little salt and alcohol on asbestos is a convenient way of getting a sodium light which gives a series of brilliant yellow and intense black bands.

The Pratt & Whitney Co. uses a square of green glass in ordinary daylight to cut off the play of the red light in the fringes and this, while slightly dimming the general effect, permits a strong contrast because it sharpens the edges of the bands, this last being of considerable usefulness,

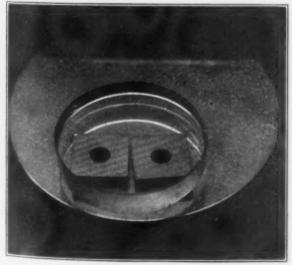


Fig. 8—Two blocks not precisely the same height. Comparison of the bands seen through the glass flat shaws a distinct difference in the two; they do not track together. It is indicated that the blocks are within one-quarter of a wave length (or about three-millionths of an inch) in height to each other, but it is seen that the surfaces are parallel to each other.

as will later be seen in comparing the position of one set of bands with another as is done regularly for measurement purposes.

#### Surface Plates That Pass Wave Length Tests

In testing for flatness a surface of metal such as that of a 5-in. surface plate of the new Pratt & Whitney Co.'s type-Major Hoke's system of making true planes is being applied to work of this size and purpose—an optical flat is laid upon it. Between the two surfaces there is a film of air. If the adjacent surfaces are nearer together at the one edge than the other, there exists between the glass surface and the metal one a wedge-shaped space, and across this space and parallel to the side closest to contact there will be a series of interference bands. If the reflection of the light is from plane surfaces, there will be straight bands; if the surface is not flat, the bands will be curved. When the two surfaces are closest together, and the wedge of air the thinnest, the bands will be most widely separated.

If the bands are straight, the surface is flat within the range of the wave lengths, these minute distances varying according to the light that is used. Watson gives the vibrations per hundredths of a second for sodium light as having a string of 12 decimal places followed by a lonesome 5. But the differences in wave lengths of various light sources only amount to a few millionths, according to scientists:

#### Determining the Degree of Inaccuracy Surface

Should the test bands be curved, then the amount of curvature tells the degree of inaccuracy at a glance. The eye can estimate whether the curve in any band would cause a tangent to that fringe to cut more than the one band. A strip of paper serves as a good straight-edge against the glass surfaces and on counting the fringes cut by this tangent to the curve, allowing ten millionths of an inch for every band, the amount of error may be determined at sight. If, however, the curve radius is not short enough to cause the tangent to cross, or even come in contact, with more than one of the neighboring bands, then the error in flatness is correspondingly less.

One-tenth the distance between the bands is found capable of easy determination and this gives the millionth as a working unit of measure-

### Quick Tests of Block Lengths

So far, the distance between the sides, or thickness, of the blocks has not been considered, the method being applied to the flatness of what are intended for plane surfaces.

To test for length is no more complicated than for flatness. The standard block and the one to be tested are wrung on to a glass flat of known reliability as to character of plane surface. Over them and resting thereon is another glass flat. If the piece to be tested has stood successfully the examination for flatness, and if it has the very same length as the standard we shall have a like showing of bands over the two adjacent surfaces when they are rotated under the glass to bring their space wedges parallel, and thereby have the bands running in the one direction. If they are different, the bands will at once disclose it, and the practical eye of the examiner pronounces a prompt verdict.

#### Why Wrung Surfaces Grip Together

When two plane surfaces are "wrung" together they cling with a close grip that is very

well known to mechanics, and has often been the subject of much discussion as to cause. While the atmospheric pressure is usually mentioned as the dominant factor involved in the experiment, the force is so much in excess of what would be expected by the elimination of the air between the surfaces that some additional reason must be sought.

Dry surfaces do not adhere as do those moistened by breathing against them, and having this fact in mind, it is easy and natural to look for an explanation by way of the surface tension of liquids. J. Clark Maxwell discussed this matter about twenty years ago and gave some formulas for the calculation of the pressure involved. He claimed that if A is the area of film of liquid, T the surface tension, B the circumference of the wetted surface, a the angle of film caused by capillary action and d is the thickness of the film, then the plates will be pressed together by a force,

$$\frac{2AT \cos a}{d} \div BT \sin a$$

An offhand idea of the pressure he claimed can be obtained by omitting the thickness d and the functions of the angle, as they refer to such minute dimensions; then the other items show how large a force is involved. The late Prof. Maxwell said, "The force that is produced by the introduction of a drop of water between two plates is enormous and is often sufficient to press certain parts of the plates together so powerfully as to bruise them or break them." Many a mechanic whose job has "seized" on him will know the full meaning of what the professor meant.

The very sudden clamping or "seizing" between two dampened surfaces when "wrung" together is explained when it is remembered that the action only takes place between very narrow limits of the very minute spaces. Quinke's experiments show that the extreme range or play of the forces causing capillary attraction is between a thousandth and a twenty-thousandth part of a millimeter, or between a twenty-five thousandth of an inch and five hundred-thousandths. estimates show that the surface tension in an intervening liquid was long ago recognized as an explanation of the condition that exists when two flat areas are wrung together. Difficulties then in the way of obtaining accurate measurements of film thicknesses are no longer interfering, and the possibilities now opened for further determinations will doubtless result in new values for these microscopical expressions of surface tension.

### New York Chapter of Steel Treaters

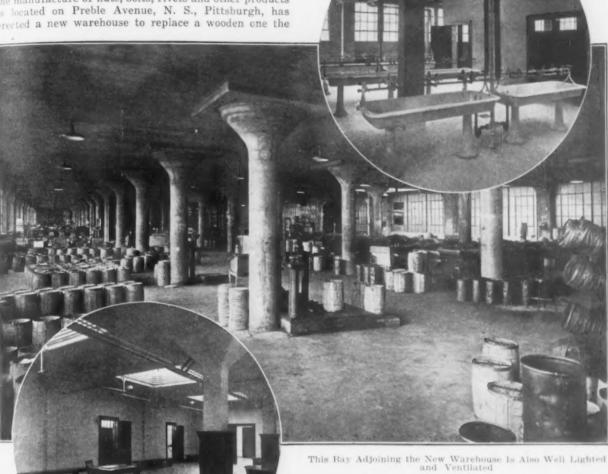
A local branch in New York, of the American Steel Treaters' Society, has been recently organized. It is known as the New York chapter. The first public meeting will be held Friday evening, May 23, at 8 o'clock in Room 602, Engineering Societies Building, 29 West Thirty-ninth Street, New York. An address will be delivered by W. H. Eisenman, of Chicago, on "Heat Treatment: Its Past, Present and Future." The new chapter was launched on Friday evening, May 16, with a dinner at the McAlpin given by Mr. Eisenman to about 20 metallurgists and business men interested in heat treating and in heat treatment supplies. At this dinner Frank B. Fahy, consulting engineer, New York, was elected chairman and L. R. Seidell, New York Testing Laboratories, Secretary-Treasurer.

The biggest single purchaser of American tin plate in March, 1919, was Japan. It received 16,260,539 lb., valued at \$1,653,300, out of a total export in that month of 55,505,977 lb., worth \$4,997,846.

### A CONCRETE WAREHOUSE

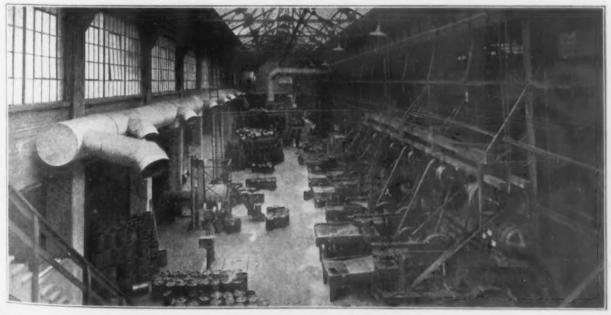
Lighting, Ventilation and Employee Welfare Considered in Design and Equipment

The Pittsburgh Screw & Bolt Co., whose plant for the manufacture of nuts, bolts, rivets and other products is located on Preble Avenue, N. S., Pittsburgh, has erected a new warehouse to replace a wooden one the



company had been occupying, and which was too small to meet its increasing needs. The building is a three-story structure 108 ft. wide by 306 ft. long, the entire building, including walls, floors and columns for supporting the second and third stories being concrete, washing the building practically flooreses. making the building practically fireproof.

The first floor is devoted entirely to shipping purposes, and is served by a standard gage railroad track, connecting with the Baltimore & Ohio track at one end



Lighting and Ventilation, a Restroom and Well Appointed Washrooms Make for the Health and Comfort of the Employees in This Concrete Building

and with the Pennsylvania Lines System at the other, the track being able to accommodate 12 cars at one time. This floor is equipped with a large number of steel bins for the storage of standard sizes of nuts, bolts and rivets that are needed for filling small orders. The floor is on a level with the car floors, permitting rapid loading. From the first floor three conveyors, furnished by the Mathews Gravity Carrier Co., Ellwood City, Pa., are used to carry bolts to the second floor. Spiral gravity carriers, made by the same concern, convey the finished material ready for shipment from the second floor to the first floor.

The second floor is devoted entirely to assembling and packing of finished products. This floor is also equipped with a large number of steel bins for storing odd lots of material. In constructing the building the Pittsburgh Screw & Bolt Co. gave special attention to the welfare of employees, and also to securing a maximum amount of sunlight and ventilation. A fan heating system was installed by the Sturtevant Fan Co. of Boston, and in the coldest weather the temperature in the entire building is easily kept as high as 70 deg.

The entire third floor is devoted to the welfare department, and also has offices for shop clerks and the shop management. This floor is equipped with modern porcelain wash stands, toilet and dressing rooms for the women, also check rooms for the use of employees. A women's rest room and a well-equipped dining room are also provided. The company furnishes coffee and other articles of food free of charge.

#### Steel Prices and Colorado Mills

President J. F. Welborn of the Colorado Fuel & Iron Co., writing for the *Industrial Bulletin*, the publication of the company, which circulates among its employees, comments as follows on the price situation in iron and steel as it affects operations at the steel plant at Pueblo, Col.:

"There has been a pronounced increase in the buying of our wire and nails and other products of the smaller mills. To secure a portion of this business it was necessary to make prices that were actually less than the cost of production, and we have been obliged to decline other business because the prices at which it could be secured were too far below cost.

"The situation as to future rail business is unsatisfactory because of the uncertainty as to whether or not the Railroad Administration will order rails for shipment during the latter part of this year. Representatives of the steel interests met the Industrial Board, appointed by the Secretary of Commerce, and fixed prices for various steel products, including rails, which the board conceded were fair to the purchaser. It was then hoped that the railroads would place orders for such amounts of rails for this year's delivery as were usually bought by the several roads prior to the time they passed under Federal control. These prices on rails have not, however, been accepted by the Railroad Administration. Their fairness to the buyer is fully justified by reports made to the Federal Trade Commission, which show costs of production with all rail manufacturers except the United States Steel Corporation to be higher than the prices approved by the Industrial Board.

"Uncertain as is this situation, we still hope that understandings will soon be reached that will cause the railroads drawing their rail requirements from our mill to place orders with us early enough to enable us to continue the present volume of production throughout the year. At the present rate of output, the unfilled rail orders now on our books will last until about Aug. 1.

"It behooves all of us at this time to continue the spirit of co-operation in the direction of increasing efficiency and reducing costs. That co-operation has been quite effective during the last few months, and we are sure all will see the necessity for continuing it, in order that our costs may enable us to take desirable business available in our territory."

# How the Panama Canal Will Help

"It is utterly out of the question for Japan to compete with Great Britain and the United States in the exportation of iron commodities," says an article published in the Japanese Revue Diplomatique, the author being T. Okamoto. The goods in which Japan must compete with Britain and America, he says, are textiles and half-finished goods or cheap manufactured articles. Further, this Japanese writer says about the possible development of American export trade: "As a result of the opening of the Panama canal, freights from New York have become cheaper than from Liverpool. Otherwise than by the canal, a steamer traveling at the speed of ten knots from New York to Yokohama will arrive eight days later than one from Liverpool,

whereas, via the canal, a steamer will arrive eight days earlier from New York than from Liverpool. Thus the Panama Canal affords great facilities to voyages between both shores of the United States and Canada and those from the Eastern States of America to the Far East, so that it will no longer be necessary to have resort to the railway across the continent."

### National Association of Corporation Schools to Consider Labor and Management

The National Association of Corporation Schools will hold its seventh annual convention at Chicago the first week in June. In an effort to work out a plan satisfactory to the new conditions of labor and capital, the convention will give considerable attention to the democratization of industry in the United States, with special consideration to be given to labor turnover, employee representation in management, better training, hours of labor, wages, stock-ownership on the part employees, profit-sharing, group-insuring, thrift activities to encourage home owning, working conditions and other problems of similar import. It is expected that the results obtained by the Standard Oil Co., the Western Union Telegraph Co., the Bethlehem Steel Corporation, the Midvale Steel & Ordnance Co., the Philadelphia Rapid Transit Co., the General Electric Co., the International Harvester Co., and the Manufacturers Association of Bridgeport, Conn., will serve as the groundwork in this campaign. It is pointed out by the association that labor turnover in the United States, in normal periods, is about fifty million annually, estimated to be 125 per cent. expense this involves is estimated at \$5,000,000,000 annually.

Surveys have been made by the association and investigators placed in the field and reports issued containing the present status of personnel problems upon which attention has been centered. The problems investigated relate wholly to the relations of the stockholders, management and the workers.

The National Association of Corporation Schools also devotes attention through its sub-committees to employment problems, training of the workers, safety as an educational problem, health education, apprenticeship training, training of office workers, fitting the technical graduate into industry, readjusting industrial organizations to receive the new factors in management, methods of instruction, the relation of the public schools to industrial requirements, marketing problems, executive training and unskilled labor and Americanization.

The headquarters of the Association are at Fifteenth Street and Irving Place, New York.

The Juniata shops of the Pennsylvania Railroad have started on the manufacture of 15 passenger engines of the K-4-S type for the Pennsylvania lines west of Pittsburgh. Previous orders of the shops had all been completed when this order was received, and officials believe that this contract will not be completed until orders for the additional equipment, which most railroads need, will be received.

# The Cast Steel Ship Development

Standard Units Cast in Sand, Assembled in Position and Automatically Welded, the Basis of a New System of Shipbuilding

BY MYRON F. HILL

Possibilities of developing a new resource for shipbuilding by using steel castings and welding labor was first brought to the attention of the shipping Board in April, 1917, and was referred by the shipping Board to the Emergency Fleet Corporation.

teneral Goethals expressed his readiness to undertake this development if the then naval architect, Theodore Ferris, would recommend it. The appropriation for ships was passed and Mr. Ferris recommended it in May, 1917. The appropriation was passed in June. At this time the Goethals-Denman situation arose and General Goethals was unable to take action. It was about this time that his connection with the Emergency Fleet Corporation was severed. Admirals Capps and Harris refused to give the matter a serious hearing, so that the development was thrown onto the shoulders of private interests.

The Cast Steel Ship Corporation was accordingly organized to develop a new system of shipbuilding, using cast steel sections, in this way employing labor resources and supplies of raw material, not then used in shipyards, for the purpose of helping win the war.

Chief of the difficulties encountered in the engineering work of developing cast steel ships was the necessity for perfecting foundry methods for producing the castings. This problem, after many experiments, has been solved and methods devised whereby the castings comprising the hull structure may be produced with a simple molding equipment and unskilled mold labor with intelligent supervision and at low cost.

#### Operating Advantages

A careful investigation of cost, in fact, has led the projectors of the cast steel ship to the conclusion that hulls of ships can be produced at a saving of more than 50 per cent of the cost of hulls of riveted ships built under equal conditions.

At the same time the cargo-carrying capacity of the cast steel ship exceeds that of the riveted ship by at least 4 per cent, owing to the joints being cast, which eliminates connection metal.

The low cost involves a corresponding reduction in fixed charges and returns to capital, and the increased cargo-carrying capacity increases earnings so that under equal conditions the cast steel ship can make a profit at a lower freight rate than other types.

In a 10,000-ton D. W. C. cast steel cargo ship of the Isherwood type the weight of steel was calculated to be about 2000 tons net in the hull and superstructure. This provides a carrying capacity of between 5 and 6 tons of cargo per ton of steel in the hull. The saving in weight is due to the elimination of connection metal between the plates and frames and most of the overlapping metal of butts and laps. The cast steel ship having the frame work cast integrally with the plating has also a greater structural strength.

The extent of damage due to accident is reduced, which in turn reduces the cost of repairs. It may be noted that the cast steel ship may be repaired in any port of the world by riveting plates and frames into the damaged portion as in the ordinary riveted ship.

A further factor in reducing repairs is the reduced rate of corrosion of cast steel as compared with ship plates, the corrosion being about one-quarter as much under equal conditions.

#### Method of Casting

The castings are made from scrap steel (shovel scrap will do) having not over 0.06 per cent of phos-

\*Weskident Cast Steel Ship Corporation, 114 Liberty Street, New York. phorus and sulphur melted in an electric furnace, from which air is excluded, producing a steel of about 0.25 per cent carbon and a low oxygen content. The result is a tensile strength of 70,000 lb.; elastic limit of 38,000 lb., and an elongation of 28 per cent in 2 in., which are higher than for rolled plate steel.

Our molds are permanent with thin sand surfaces renewed for each casting, and with such forms skilled molding labor is practically eliminated and the amount of man work per ton of castings is small. The illustration shows a casting approximately ½ in. thick and 10 ft. 6 in. long. As many units may be cast in one casting as may be desired, say, extending from the bilge to the rail of the ship. When two or more units are cast together there are as many pouring gates as there are units, the metal being poured down the channels in the mold forming the bulbs.

The molds are so inclined as to have somewhat the effect of bottom pouring, the top edges of the flowing metal being liquid until the mold is filled. This facilitates the free escape of gases from the metal and prevents the formation of gas pockets in castings. Dry sand molds prevent pitting. The character of sand used provides a smooth surface, the sand scaling off when the casting is rapped. Suitable chills are employed in fillets and over bulbs. Castings come out of the sand true and oil tight.

#### System of Framing and Plating

This system of shipbuilding has been developed, employing flat castings, except for the castings of the bilge, which are treated in the annealing oven to give them suitable curves and warps.

By having the frames of the ship normal to the shell throughout, it is possible to cast the shell (except the bilge), the inner bottom, decks and bulkheads in one or two molds in which the thickness of the castings and depths of frames may be varied by scraping more or less off the surfaces of the sand rammed on permanent forms for each casting. The bilge castings require an extra curved mold for the forward and after body.

The sections are so designed that the ship may be built from either end or from a middle point. If a ship is started in the middle and built in both directions two gantry cranes spanning the hull may be employed, one hook on each crane for each side of the ship, four hooks in all; and each hook can land a casting in place well inside of 10 min. There are some 2000 castings to be handled in a 10,000-ton ship.

The method of assembling is: To keel castings are secured bottom castings, each having longitudinals and half of a main transverse floor. Next intermediate floor castings are located. Tank top castings follow, each having longitudinals and the other half of a floor. Next are assembled bilge castings. Side castings are located, each carrying longitudinals and margin plates, the inner parts of main transverses. Then come hatchways supported on stanchions, followed by deck castings. Bulkhead castings and other details are located in proper order.

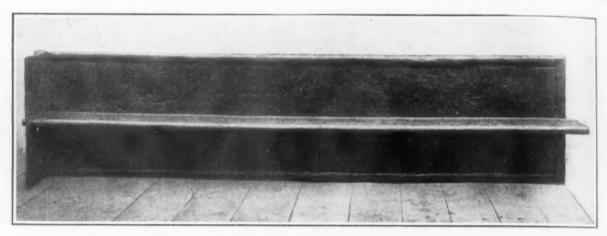
#### The Special Joint

The joints between the castings are of particular interest and are made possible by the casting process. One edge is provided with lugs and the other edge with dovetails interlocked in place by electric arc welding. They fit loosely to allow for the go and come between the castings due to variations in contractions.

The interlocking parts are so arranged and designed that the mechanical strength of the joint, due to the tensile strength of the dovetails and the resistance to shear of the lugs, is equal to the tensile strength of the plates. The seam upon the outside is also electrically welded to render the joint water tight, as is indicated in the drawing. The mechanical strength of this joint is 100 per cent of the plating, a result long sought for in shipbuilding.

The welding upon the lugs and in the seam adds well over 200 per cent to the strength of the joint

welding by a system of wedging. When the castings are fitted to each other there are spaces under the ends of longitudinals within which to drive wedges to bring the edges of the casting tightly together. One or two men can tighten the edges of the castings as fast as assembled and faired up. After they have been wedged together, lugs at extreme ends of a casting are welded between their dovetails, and then intermediate lugs here and there are welded until all of the lugs have been we'ded into position between the dovetails; after which the seam upon the outside may



Cast Plate Unit Poured in Permanent Mold with Thin Sand Surfaces. The steel is 0.25 carbon made from scrap, bol over 0.06 phosphorus, melted in a scaled electric furnace

provided the welding is sound. If it should be defective or part for any reason, the worst that could happen would be a leak through a slight crevice which may be temporarily remedied by calking inside of the hull.

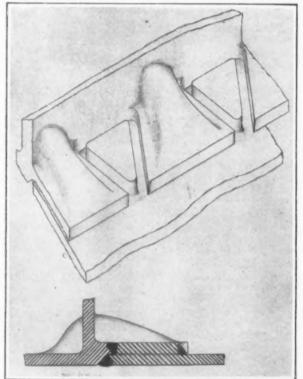
#### Fatigue of Welded Joints

One of the defects of welding is its inability to withstand fatiguing strains due to the bending of the joint under variable stresses. This is remedied by the joint illustrated, which is of such a heavy mass that bending strains cannot occur across the joint. The bending action occurs in the plates on either side of the joint. The bending strains along the joints are prevented by the frames or longitudinals along which In fact all the they run. joints of the shell, decks, etc., of the ship lie along the frames or longitudinals of the ship, so that bending strains can exert no fatigue stresses in the joints and the welding is never weakened.

Such joints are of the very greatest importance in welded ships. The welded joints heretofore proposed are subject to these fatiguing strains, and it is believed by the writer that in time serious damage and possible loss of the ship may result from the parting of a welded joint heretofore proposed, due to the fatigue of the metal under continued stresses. While a welded joint is shown in the photographs it is possible under the patent rights of the company to build riveted cast steel ships as well and either the transverse or longitudinal system of shipbuilding.

As the joints are superior in strength to the plates, butts no longer have to be shifted.

The castings are fastened together temporarily for



Luss on One Unit Fit Loosely Into Dovetalls of Other, Allowing for Variations in the Castings. The welding is done automatically by the electric arc system

be welded. Automatic instruments are being developed for accomplishing this welding without skilled welding labor and at great

The system of casting employed is applicable to other purposes than ships. Cast steel drydocks are possible with a considerable saving in weight.

Castings in the United States for locomotive tender frames, vestibule ends of cars, trucks, etc., are rapidly displacing built up riveted forms with profit to the users and added safety to the traveling public. The cast steel ship enterprise is aimed at a similar development for marine transportation.

Upon compliance with the specifications of the Cast Steel Ship Corporation for castings and joints, Lloyd's Register of Shipping has signified in writing their readiness to classify cast steel ships. The Technical Department of the United States Shipping Board, Emergency Fleet

Board, Emergency Fleet Corporation, has also approved our plans for a cast

steel welded ship.

It is believed by the company that if the Government had left shipbuilding open to competition that they would have been able to get equipment, shipways and steel to produce by this system hulls of superior strength and carrying capacity at a great saving in cost. But Government ownership and control prevented any actual shipbuilding from being undertaken.

The company is arranging contracts at the present time for a few hulls of ships and intends to license enough American shipways and provide casting resources therefor to care for normal needs under conditions that should give the lead to American shipping.

# Steel Mill Practice and Heat Treating\*

Effect of Various Producing Factors on Ultimate Product—Dirt in Electric Steel—Effect of Shape of Ingot Mold

BY A. F. MAC FARLAND

A DISCUSSION of the relation existing between steel mill practices and the heat treatment of fabricated steel parts in metal-working industries is such a broad subject that it is impossible, in a short paper, to deal with it in an exhaustive manner. It is hoped, however, that certain lines of profitable investigation may be suggested that will help to solve some of the difficulties existing to-day.

Arguments between the producer and the consumer are continually cropping up as to which party is responsible for the failure of steel parts. In other words, the question arises as to whether it was poor steel or poor heat treatment in the producer's plant that caused the trouble. If it were not for these questions many steel experts and metallurgists would be without employment, as the producers have employed men of this type to determine where the trouble lies. On the other hand, consumers of steel have found it advisable to maintain laboratories whose proper function includes protecting their companies in the quality of raw material purchased. There is a trend at the present time, and a very fortunate one, toward the co-operation of the producer and consumer through their respective steel experts to provide a get-together basis upon which to work out these disputes. The days of trade secrets are slowly but surely passing, and an open door policy is being adopted by the more progressive companies. This trend should be fostered and encouraged.

#### Controlling Factors in Heat Treatment

In a broad analysis, time, temperature and concentration of elements involved are the controlling factors of all heat treating. Consider what means are utilized in commercial practice to control these factors. Temperature, for example, leads to a consideration of the method of heat generation, its proper application and the suitability of the method for attaining the degree of temperature required. In the Bessemer converter heat is generated by chemical reaction in the metal. Open-hearth furnaces are fired with oil, gas, or tar, the hot products of combustion coming into direct contact with the bath. The generally used direct arc type of electric furnace for making steel is supplied with heat by the electric arc. Crucible furnaces are heated by the combustion of oil, gas or coke, and the products of combustion do not come in contact with the steel.

The object in calling attention to the differences in methods of heat generation and application of the four processes is to raise the question as to what effect they have, if any, on the intermolecular structure of the steel produced that will influence its properties during the subsequent operations. To be more definite, what advantage has the soft heat of the crucible furnace, whose temperature exceeds the melting point of the steel by only a working margin over the more violent heat of the Bessemer process? What influence does the superheated steel directly under the electrodes in the electric furnace exert upon the finished product? It is believed that a great amount of scientific research along these lines is necessary to provide reliable answers to these questions.

#### Dirt in Steel

Many have experienced troubles due to dirty steel. There are many causes for this difficulty and most of them can be traced to the melting department, although the rolling mill has been found guilty frequently. Careless handling and working of heats, together with an unappreciation of the deleterious effects of non-metallic

inclusions may be said to be the usual reasons for dirt in steel. Dirt, meant to include everything that is not metal, comes from slag, improperly prepared tapping holes and spouts, ladles, gases, aluminum additions to the ladle, etc., and is a big and important subject by itself. In order to divert the discussion from broad generalities some remarks concerning electric furnace practice may be of interest.

#### Electric Furnace Practice

The first commercial electric furnaces for making steel were operated in much the same manner as openhearth furnaces, so far as refining, tapping, etc., were concerned. The furnaces were, and are still, equipped with a tapping spout over which metal and slag were poured into a ladle. Many operators, although of previous open-hearth experience, failed to consider that open-hearth furnaces have their tapping hole below the slag line and, on tapping, clean metal is obtained, the slag following the steel flowing into the ladle last and acting as a blanket to the metal below, keeping it hot and preventing skulls. After serious troubles were experienced by some companies, an open-hearth melter operating an electric furnace, bricked up the tap-out door on his furnace, leaving a hollow tile or sleeve brick for the metal to flow through. This was filled with dolomite and the furnace tilted when the heat was ready. The pressure of the metal behind the dolomite stopper dislodged it and a clean tapout was obtained.

Improvements have been made upon this scheme for holding the slag back until last, so as not to rile it up with the steel in the ladle, and a sketch of a very satisfactory arrangement is shown in the illustration. In this device the hollow tile through which the hot metal passes is stuffed with waste which holds the metal and slag back until the spout is full and then burns out. A further advantage is provided by the visible spout, enabling the man tilting the furnace to gage the head of metal. In this manner a perfectly clean tap can be obtained if the furnace is carefully handled.

Clean brick lined ladles are more conducive to obtaining clean steel than ladles lined with ganister or brick with a fire-clay wash. Also, holding hot steel in the ladle to allow the gaseous and other impurities to rise to the surface is another point that is often neglected and is very important in obtaining clean metal. All precautions of this nature, however, are superfluous unless the steel has been properly deoxidized or killed in the furnace, so that upon tapping the metal lays quietly in the ladle.

#### Prejudice Against Electric Steel

Much of the prejudice against electric steel that existed only a short time ago was probably due in many cases to dirt. When electric steel failed, the consumer has blamed the process rather than its incomplete development. The war activities in the past few years have done much to overcome this prejudice and many of our best gun steels, high-speed tool steels and other high grade products have been produced successfully in the electric furnace.

How can dirty steel be detected? Microscopic examination has proven to be extremely valuable in this matter, but, like all of our methods of testing it, has serious handicaps. In the first place, a relatively large number of samples should be examined from each heat before condemning it as dirty steel. This requires time and sometimes the production department will not wait. On the other hand, the small consumer has no facilities for this kind of testing and must rely to a great extent upon the steel mills to furnish him with high grade

the American Steel Treaters' Society. The author is with the Vancount Alloys Steel Co., Latrobe, Pa.

material. Of course, the best test of the pudding is in the eating, and it is the service rendered under actual working conditions that tells the tale. This is unfortunate, inasmuch as the steel may not be known to be defective until it fails.

Steel used for wearing parts such as ball bearings, rapidly goes to pieces unless it is dense and free from non-metallic impurities. Tool steel gives poor service if it is not clean and often the tool hardener gets the blame unjustly. Dirt in gun steel causes rapid erosion of the bore, and consequently shortens the life of the gun. When any steel to be heat treated contains occluded slag and gas it is liable to check or crack when it is quenched.

Steel makers have been very reluctant to admit that "dirt" is an almost unavoidable component of all commercial steels, but it is believed that the problem should be faced squarely with an earnest endeavor toward improvement rather than trying to camouflage its true nature. As an evidence of this, the vice-presi-

dent of a certain company insisted that the black spots on the author's photomicrographs were not dirt, but defects in polish-This statement was made, not on account of ignorance, but, let us say, for "business reasons."

#### Effect of Ingot Mold Shapes

The passage of steel from a liquid to a solid phase in actual practice presents some of the knottiest problems steel

mills manufacturing high class material have to deal with. How to make good ingots is as much of an art as it is a science. Besides the inherited influences from the melting and refining process, the temperature of teeming, methods of casting and the design and proper use of ingot molds have a direct bearing upon the soundness of the ingot and its suitability for subsequent forging.

Perhaps one of the best known sources of trouble to consumer's heat treating departments is pipe. The influence of the pipe, or shrinkable cavity at the top of the ingot will depend to some extent upon the ability of the steel to weld. Some of the modern alloy steels weld with difficulty, but, even if the weld is complete, the central part of the rolled or forged bar will never be the same as it would have been had the pipe been absent. Steels exhibiting a hard center have often been encountered and have given trouble. This abnormal hardness may be due directly to segregation and indirectly to pipe. The shape and general design of ingot molds have a great deal to do with the troubles encountered with piped steel.

A steel maker was overheard in making statements to the effect that mold shape and design had little effect upon the results he had obtained, that he had tried them all and one was as bad as another, and that two-fifths of the length of most of his ingots had to be cropped. Mold shape and design is not a cure-all for pipe and should never be considered as such. The pouring or teeming temperature of molten steel, together with its rate of flow into the mold, are more important considerations than mold design in making sound ingots.

#### Progress in Research

Splitting ingots to examine their internal conditions is both an expensive and time-consuming procedure. Steel manufacturers, however, have refused to let trouble and expense stand in the way of finding out, and a vast amount of investigation has been carried out that has proven extremely profitable and instructive. The world owes a great debt of gratitude to English metallurgists, as Great Britain has been the leader in carrying out these fruitful experiments. In past years, especially before the war, the American steel

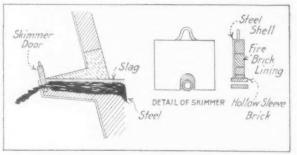
industry was on the whole a tonnage proposition. During the next decade the United States has a wonderful opportunity to procure a large share of the world's steel business, but the quality of our steel must not only equal, but surpass, that manufactured in other

#### Effect of Scorching Steel

The examination of split and broken ingots has been very instructive as to the bad effects of casting steel at too high or too low a temperature. Scorched ingots are best known among the tool steel mills, perhaps on account of the small size of the ingots cast. It has been found that by casting slowly enough, or by increasing the size of the mold (retarding the rate of cooling) the scorched effect may be eliminated irrespective of how high the temperature of casting may Scorched ingots are fragile and often cause much trouble in cogging, forming cracks on the corners of the bar which are caused by weakness due to the well

developed crystal structure characteristic of the scorched ingots. Steel cast at excessive temperatures also delays the cooling of the ingot by excessively warming up the mold to such an extent as to prove deleterious to both molds and ingots.

Many tons of electric furnace steel billets have been scrapped because of cracks that developed in the cogging operation. There is little doubt that much of this loss was



Arrangement Suggested for Preventing Slag in Electric Furnaces from Being Tapped when the Metal Is. It is in use in one plant

occasioned by the excessive temperature of casting ingots. In the open-hearth and crucible process the margin of temperature attainable above that necessary to get the steel out of the furnace and into the molds is probably not more than 100 deg. C. It should have been foreseen that troubles due to casting electric steel would be encountered because of the greater temperature of the bath that is possible to attain in the electric furnace.

#### Cold-Cast Ingots

Cold cast ingots exhibit badly pitted surfaces which must be chipped and ground smooth before working. This is one source of troublesome seams and cracks in the finished bar. Also cold cast ingots often exhibit blow holes and segregations. The bottom portion of a cold cast ingot is usually lower in carbon content than the remainder of the ingot. This is due to the formation of individual crystals and crystal groups of more pure iron in the molten steel, which sink to the bottom, due to their greater weight.

Blow holes in finished steel parts are a never-ending source of aggravation to consumers of steel and their heat-treating departments. A blow hole causes checking, warping, blisters and many other troubles. origin may be traced to a variety of sources, as there is no one factor responsible for all blow holes. Steel may be thoroughly deoxidized in the furnace, but when it is poured into the ladle or teemed into molds it reacts energetically with the oxygen of the atmosphere through which it passes. Therefore the stream of metal should be kept solid, and minimum splashing should occur in order to keep the surface exposed to the action of the atmosphere as small as possible. Oxygen acting with steel forms iron oxide which in turn reacts with carbon in the steel, liberating gas. Some of this gas is trapped and forms blow holes in the steel as it rapidly solidifies in the molds.

#### Rusty Mold Surfaces

Mold surfaces, if rusty, also are the origin of blow holes due to a similar action between rust and the steel. Therefore steel mills have found it necessary to carefully inspect mold surfaces and to keep them scraped clean and smooth. Split molds offer many advantages over solid molds for inspection and dressing purposes and are being adopted very extensively where size and weight permit of their economical use. Steel that is not thoroughly killed or goes wild in the ladle always contains blow holes and should be scrapped in

the melting department.

The formation of blow holes by the action of iron oxide and carbon in steel is usually accompanied by troublesome ferrite segregations familiar to all metallographists. The blow hole may weld shut during cogging and rolling, but the ferrite segregation remains as a white tombstone to mark the place where a blow hole has existed and died under the hammer or between the rolls. If steel, in casting, splashes on the side of the mold above the level of the steel, it immediately solidifies and oxidizes, causing ferrite segregations when the mold is filled and the ingot freezes. Ghosts are also a direct inheritance from the ingot and cause much trouble by lamination or splitting, as is commonly encountered in strip steel.

#### Hair Seams and Other Defects

Minor surface defects in bars of finished material cause no end of trouble in hardening, tempering and annealing operations. Hair seams, not visible to the naked eye, often pass inspection in the mill and get to the consumer, who does not detect them until the machined parts reach his heat-treating department. Seams are usually caused by bad ingot surfaces, blow holes just below the surface of the ingot, insufficient chipping and grinding, and dirt from the hearth of the heating furnace sticking to the surface of the billet. Careful inspection together with plenty of chipping and grinding will eliminate most of these difficulties.

In the rolling mill, faults having a little different origin than seams, but often appearing as such, may be developed, such as roaks, overfills, laps, etc. A roak is caused by rolling scale into depressions of a billet. This scale causes decarbonization of the surrounding metal, giving rise to defective areas which manifest themselves as soft spots, checks or cracks in the fin-

ished parts.

#### Degree of Reduction

The degree of reduction from the ingot to the billet and from billet to bar to give maximum physical properties is another influencing factor of importance. There is no hard and fast rule in general usage for percentage reduction, as it depends to some extent upon the chemical analysis and properties of the steel being worked. In all cases, however, the ingot should receive working sufficient to obliterate all traces of ingot structure. When ingot structure is inherited by the finished bar it is known as ingotism.

Heating temperatures, soaking periods and finishing temperatures should be under careful control in forging and rolling steel in order to impart as near the desired physical properties to the finished steel as is practicable without resorting to further heat treatment. Tool steels require more careful handling than the ordinary grades, and it has been found advantageous to anneal the ingot before placing it in the heating furnace pre-

liminary to cogging down.

The foregoing has dealt mainly with mill defects, their origin, remedy and the effects they produce in the heat-treating departments of the consumer. Many users of steel show an unwarranted tendency to believe that there is very little good steel on the market. If he would worry less about the quality of steel and pay a little more attention to improving his methods of heat treating, his imaginary steel trouble would disappear. For, if the truth were told about how much good steel has been and is being spoiled in the consumers' heat-treating departments, due to careless handling and the use of antiquated methods and equipment, a whole library would not hold the evidence nor measure the money lost. While there is a great field for improvement in methods of manufacturing and handling at the source of supply, there is an equal opportunity for the consumer to progress by the installation of better equipment and the improvement of methods of handling and heat-treating steel parts.

The manufacture of steel is not a rule of thumb

proposition, nor will it ever become such. The quality of steel produced and its ability to respond to heat treatment, giving superior physical properties desired, depends entirely upon the local conditions surrounding its manufacture. Steel consumers have been rather slow to realize this fact, and often show an unwarranted prejudice by condemning steel because it has been made by a certain process. In some instances Bessemer steel has been furnished on orders specifying the openhearth product, and no complaints have been registered. This may have been due to the unimportance of the part being manufactured, or the Bessemer steel may have been of exceptional quality. It may be of interest to those unfamiliar with the possibilities of good Bessemer steel to refer to a paper by McWilliam and Barnes on "A Heat Treatment Study of Bessemer Steels" given before the Iron and Steel Institute. Mention of the Bessemer process has been made for comparative purposes only, as its field in modern steel making will probably be more or less confined to the duplexing and triplexing processes that are being widely adopted.

#### Potency of the Personal Equation

Making good steel involves the personal equation perhaps to a greater extent than any other large industry. Good equipment is very desirable, but excellent steel was produced by ancient craftsmen long before the days of electric furnaces, traveling cranes, bottom tap ladles and charging machines. The secrets of the art of steelmaking were handed down from father to son and have been many years in becoming public property. When output was placed above all other considerations, processes were modified for the purpose of speed rather than quality. The personal element has been neglected and its general effect in many cases has been belittled. The gulf between the scientifically trained metallurgist and the skilled artisan must be bridged to promote maximum progress and development of the steel industry.

#### Employment Methods in Government Shipyards

"Handbook on Employment Management in the Shipyard," dealing with modern methods and practices, is the subject of bulletin 3 pertaining to the selection and placement of the worker, compiled by the employment management branch, industrial relations division, Emergency Fleet Corporation, Philadelphia. The key slogan of the topic as printed is: "It is more economical and more expedient to spend five or even ten minutes in properly placing the new worker than it is to spend two hours or sometimes two days in trying to replace him." Phases discussed are: the interview of the new worker, the requisition for help, job specification, trade tests, special interview by the foreman, physical examination, means of identification, issuance of pass, introduction to the new job and proper placing upon the payroll. Half of the pamphlet is devoted to suggested forms to be used in the steps described.

Allen Walker, head of the Foreign Trade Department of the Guaranty Trust Co., New York, in addressing a recent meeting of the Members' Council of the Merchants' and Manufacturers' Association, Baltimore, said: "Let the steel men of New York and Pittsburgh put their feet under the same table with the steel men of Sheffield; likewise in all other trades. It is one way to prevent a continuance of the old ruthless and unnecessary cut-throat competition and trade rivalries of the past which, unchecked, unbridled, will surely provide the one vehicle by which the enemy may 'come back' commercially to former power."

The Hartford branch of the Connecticut section of the American Society of Mechanical Engineers and the Connecticut Valley section of the American Chemical Society held a joint meeting on the afternoon and evening of May 12. Inspection trips were made to the Hartford Rubber Works and to the laboratories of the Henry Souther Engineering Co. A banquet in the evening was followed by an illustrated lecture on rubber.

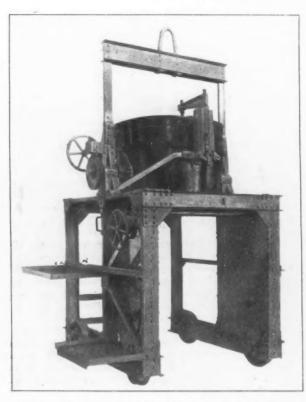
### Combination Ladle and Truck

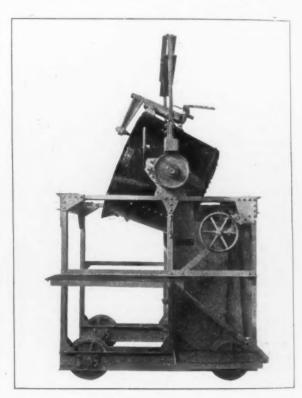
A device for pouring small ingots from a ladle suspended from an overhead crane has been put on the market by the T. W. Price Engineering Co., Woolworth Building, New York. It consists of a specially designed ladle suspended from a bale on the ends of which are fastened steel castings in the shape of inverted square pyramids which engage hollow castings of similar shape fastened to the truck, the object being that when the ladle is lowered into the truck it is self-centering and no extreme accuracy of operation is necessary on the part of the crane operator in placing it in the carriage. The ladle can be tipped for pouring from the lip or for pulling the slag when suspended either from the crane or when seated in the carriage by means of a hand wheel actuating self-locking worm gearing. The bottom pour device is controlled by a removable lever projecting over the side of the carriage. For adjusting the stopper rod over the opening in the bottom of ladle only one screw is found necessary.

A single operator standing on the truck platform moves the truck on the tracks by means of a large hand wheel, which drives two of the four truck wheels. their center line is on the center line of the ladle nozzle, by means of channel-shaped castings fastened to the floor between the rails. These castings engage the bottom of the molds and filler blocks are inserted where necessary to accommodate different sizes and heights of molds. Where split molds are used there is a mold rack provided consisting of tee or angle irons, straddling each rail on which the molds are placed, and smoked after each heat.

The company is offering these ladles and trucks in capacities of 2 to 10 tons and specially designed motor driven trucks for any capacity above 10 tons. Special pouring devices have also been designed to meet certain requirements, one of which is very similar to the device described, except that instead of a bottom-pour ladle the pouring is done from the lip of a teapot ladle, which is tilted about its pouring lip as a center by hand mechanism in order to control pouring accurately. The ingots are lined up as before, and in addition to reducing fall of molten metal, certain difficulties always attendant upon the bottom pouring are eliminated.

The company also has a device for pouring three rows of ingots instead of one, in which a large lip-pour ladle pours into a small bottom-pour ladle which moves





Combination Ladie and Truck for Pouring Steel, Particularly Small Ingots. The ladie can be tipped for pouring slag or steel

All of the wheels are on roller bearings and the driving mechanism is geared so that one man can move the truck at the rate of 50 ft. per min. when loaded with a ladle filled with 10 tons of molten metal. The operator is protected from the splash of molten metal by a plate on the side of the truck. In this is an opening covered with isinglass, through which the operator can see the bottom of the pouring spout and the tops of the ingot molds.

If a teaming pot is used it is placed on a swinging bracket mounted on the side of the truck. It is claimed that pouring into a teaming pot and from thence to the mold reduces the pipe in the ingot, as it lessens the force of the molten metal's falling into the mold. The single stream of molten metal from the ladle can be divided into several smaller streams by means of openings in the bottom of the teaming pot.

With the T. W. P. ladle and truck the one operator standing on the platform, with one hand propels the truck and with the other hand controls the bottom pouring. After the ingots have been poured, he tips the ladle by means of the hand wheel on the bale, and the slag is poured over the spout.

The ingot molds are automatically lined up so that

transversely on the truck and pours three ingots in one position of the truck.

The ingot stripper, designed by the same company and described in THE IRON AGE, May 1, may run along the same track and operate in conjunction with the ladle trucks.

#### Will Have Varied Industries

The site of the Traylor Shipbuilding Corporation, Cornwells, Pa., will be converted into a community manufacturing village as soon as the United States Shipping Board releases control of the shipyard which was built there during the war. Although the plan has not been worked out in all details, the Traylor corporation has stated that there will be about one half dozen industries, all under one head and controlled by one executive force. Among the industries to be established are shops for the manufacture of automobile trucks, passenger automobiles, automobile bodies, automobile accessories, spades, shovels, picks, axes and other such tools, and a plant for the treatment of railroad ties and telegraph poles with creosote and a jobbing machine shop.

# Elaborate Survey of Belgium's Industries

Official Report Gives an Idea of Needs of the Country in Iron, Steel and Machinery—Destruction of Many Plants Complete

Washington, May 20.—As the result of an elaborate survey made by the Comite Central Industrial de Belgique, the unofficial organization of the Belgian Government, the Buleau of Foreign and Domestic Commerce has issued a report detailing the needs of the Belgian industries.

This report is of first importance to American industries because it gives with the backing of official authority the state of the Belgian industries as well as the demands which will have to be filled—mostly by the United States—both in macainery and in raw

materials.

The Comite Central Industrial de Belgique, says Trade Commissioner Harry T. Collins at Brusseis, was charged with the collection of information regarding the destruction of property in Belgium by actual warfare or with the deliberate intention of crippling the country's industries. The information which this committee has collected shows innumerable cases of the destruction of industries. Sights such as those at La Louviere, at Charleroi, at Seraing, leave no doubt as to the industrial losses which Belgium suffered in the war.

#### Steel Works Destroyed

"With the exception of two plants at Charleroi, which were requisitioned and placed under forced operation by the enemy," says the report, "all the large steel plants have suffered considerable dismantling and destruction, which will entail prolonged idleness. The plants most seriously affected in this respect are probably those at La Marcinelle (near Charleroi), and Seraing. Others which have been partly spared can, for the present, resume the manufacture of certain products.

"The metal-working industries include shops for the manufacture of locomotives, cars, machines, copper plate, construction steel, electrical apparatus, automobiles, bolts and rivets, forges, iron, steel and copper foundries—in short, everything connected with wrought

metals.

"The enemy was particularly destructive in regard to this industry, and there was no shop, however small, which was not deprived of its best machines, its leather belts, and the copper parts of its transmission system. In many cases the destruction extended even to the bases of the machines, which were demolished, and sometimes even to the foundations of the buildings. Localities of Morlanwelz, Nivelles, Charleroi, Mange, Le Roeulx, Louvain, Buysinghen and many others present really deplorable examples.

"A certain number of shops, especially those devoted to locomotive and car construction, were spared, the enemy taking them over and exploiting them for the needs of its railroads. They will be able to resume production as soon as supplied with the necessary raw

materials.

"The coal mines which continued to work are intact, with the exception, naturally, of the abnormal wear and tear on equipment—notably the hoisting tables, which will call for immediate replacement. A great number of coke ovens have been left without fuel and have suffered confiscations of metal, baking apparatus, etc. Partial operations, however, have been resumed.

#### **Equipment Lost**

"Contractors for public construction work have lost considerable quantities of equipment as the result of requisitions, which will seriously hinder their work for the present. They count a great deal upon the supplies which the military authorities may offer them during the demobilization and also upon the utilization of the stocks of wood and other material abandoned in Belgium by the enemy."

The itemized needs of the Belgian iron and steel industries follow:

3	terrie	Tons
Cast iron	4	0.000
Hematite iron		7.500
Hard, malleable "white" cast from		900
Gray pig iron, malleable		450
Cast iron for machine cylinders.		600
Tyneside iron		4,000
Martin iron		0.000
Ferrosilicon, 10 per cent		200
Ferrosilicon, 50 per cent		5.0
Ferromanganese, 60-80 per cent		1,200
Ella of Sweden or similar fron		2,000
Spiegeleisen, 10-12 per cent manganese.		1.250
Spiegeleisen, 18-20 per cent manganese		1.250
Cold blast iron		900
Scotch iron, half strength		1.800
Forge pig		7,500
Blooms	1	4,000
Silica bricks (called Dinas) for Martin furnaces.		3:750
Silicious mortar for same		370
Magnesium bricks		3,750

The quantity of profiles, rails, sheet iron, wire and rods, bolt and rivet material, and steel for reinforcing concrete has not been finally determined.

For the other metal-working industries, the report declares that the preparation of the list has been exceedingly difficult, so that it has not yet determined the exact totals that will be noted. It declares, however, that considerable quantities of tools, both hand and machine, as well as electric motors, belts, tool steel, cast iron and profiles will be needed.

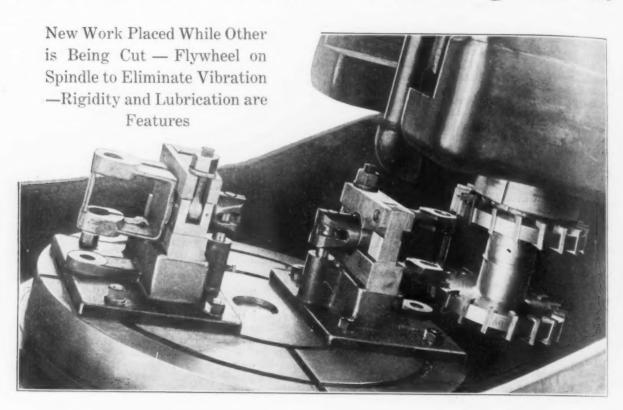
#### Rebuilding Railroads

For the rebuilding of railroads, roads and the general public construction necessary throughout Belgium the committee includes the following needs, with others:

	Kilometers
Rails, 23 kilos	500
	Number
Switches	250
Locomotives, 18 metric tons	150
Closed cars, 10 metric tons	200
Dumping cars, capacity 3 to 4 cubic meters.	2,000
Dumping cars, capacity 2 to 5 cubic meters	
Dumping cars, capacity 1 to 5 cubic meters	2.000
Transportation trucks	
Automobile transportation equipment-	
Tractor trucks, capacity 3, 4, and 5 metric tons	1,500
Steam trucks, Idem	
Trailers, capacity 2 metric tons	
Automobiles	100
Narrow-gage railways (gage 0.6 meter)	
Rails, 9 kilos	200
	Number
Crossings	500
Cars, capacity 1 cubic meter.	2,500
Locomotives, 9 metric tons,	150
Transportation trucks	
Building and architecture-	
Steam or gasoline engine crushers, pan 1.60 me	tersi
in diameter	250
Steam or gasoline engine crushers, pan 2.20 me	ters -
in diameter	250
Locomotives, 20 to 30 hp	
Stationary steam engines, 100 to 200 hp	200
Concrete mixers, capacity 3 cubic meters per 1	hr., 200
Concrete mixers, capacity 10 cubic meters per 1	hr., 100
Concrete mixers, capacity 20 cubic meters per l	hr. 1,500
Carts, capacity 500 liters, gage 0.5 meter	100
	Kilometers
Decauville rails, gage 0.5 meter	100
	Number
Lifts, hoists, etc., carrying capacity 500 kilos.	200
Titan cranes	25
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For the coal mines, it is estimated that 3630 metric tons of steel cable wire for the hoists and 67 metric tons of steel wire for accessory cables will be required as well as 100,000 meters of "mining cables." The requirements for the coke industry have not yet been submitted.

# Continuous Production Tilted Milling Machine



A TILTED rotary milling machine designed for continuous operation is announced by the Osterlein Machine Co., Cincinnati. The purpose in the design was the creating of a machine that would advance the limits of milling machine production by cutting down the idle time between cuts, the elimination of parts with increase in rigidity, and copious lubrication of the cutters.

Continuous milling is obtained by equipping the machine with a rotary table which carries the work to the cutting position. During the cutting operation, work is being replaced at the opposite side of the table. This not only eliminates lost time but also sets the pace for the loading operation and results in a uniform output over a given operation period.

The cutter can be held in a fixed position and the table rotated continuously by automatic feed for continuous milling, or the cutter may be reciprocated radially in combination with an intermittent motion of the table controlled by an indexing mechanism. This indexing mechanism is capable of from 2 to 72 divisions and the table revolves rapidly between divisions so as to reduce the idle time.

By feeding the cutter radially over the surface of the work it is pointed out that the loss of time between milling surfaces is avoided on such jobs that can not be compactly spaced, also the non-productive time of cutter approach is avoided, the cutter travels the shortest possible distance, two or more simple fixtures may be used instead of one large fixture, and the machine is practical when applied to small quantity lots.

Rigidity is obtained by reducing the number of parts to the minimum and by heavy construction of these parts. The body of the machine is cast in one piece. The working surface of the table and the cutter spindle are both contained in this casting, thus to avoid the possibility of relative deformation under load of cutter and work.

The body of the machine is directly under the circular table. From the table bearing to the floor there is nothing to depreciate the rigidity. There is no overhang on any part of the machine, the ram bearings being extended in front so that even in the advanced position of the cutters the full length of the ram is effective.

A worm wheel of 28-in. pitch diameter, driven by a worm of 1½-in. pitch and 4-in. diameter, drives the circular table. The worm wheel is located as close to the table surface as the taper table bearing will permit, and is bolted and pinned to the table at the extreme end of the bearing, the central stud merely serving as a means of aligning the worm wheel and table. The table bearing comprises a surface of 475 sq. in., scraped to contact. The table is 30 in. in diameter and is set at an angle of 15 deg.

The ram bearing comprises a total surface of 1000 sq. in. and three gibs provide for adjustment in all directions.

The spindle carries a No. 16 B. & S. taper and cutters are positively driven by means of a clutch in the end of the spindle. A 250-lb. fly wheel is mounted on the upper end of the spindle. Its momentum imparts a steady motion to the cutter as it is driven through the work, and in connection with the heavy construction of the machine, vibration that is so detrimental to the permanence of the cutting edge of tools is avoided.

A pump of 35 gal. per min. capacity is used for cooling the cutters. The coolant is raised under pressure several feet above the surface of the table and expanded into a large pipe so that it falls on the cutters and work under practically no pressure. This system prevents splashing that would be caused by a high velocity of the coolant, and the coolant is carried around by the revolving cutters so that a flow of lubricant is passing over the cutting edges during their idle travels.

The tilting table places the cutter in a low pocketlike position and a greater flow of lubricant may be used without splashing than would be posssible on a horizontal table. The flow washes practically all the chips away from the work, the tilting table assisting in condensing them in the space provided in the base of the machine.

The tilting table makes it possible to use an auxiliary pan so that the cutters could be run entirely beneath the surface of the coolant, and the work emerge from the lubricant at the loading position. The lubricant drains from the chips into the base of the machine. This reservoir has a capacity of 60 gal. This sub-

surface cutting is not supplied as regular equipment as the builders have not found that the system possesses sufficient advantage over the quantity of coolant available in the stream from the pump. Should sub-surface cooling enable the cutter to remove metal with greater rapidity, the construction of the machine lends itself to the application of such a system.

The machine is driven by a belt over a pulley located on the side of the machine. It may be driven from a line or jack shaft or by a motor mounted on a special base plate located on top of the machine. Power for driving the spindle is transmitted from the pulley, through mitre gears to an intermediate shaft. This shaft connects with the first change gear shaft in the speed box by means of a second pair of mitre gears. A single pair of change gears connects the first and second change gear shafts. "Pick-off" gears are used on the two shafts to vary the spindle speeds. A bevel pinion on the second change gear shaft meshes with a bevel gear on the spindle.

The intermediate shaft is splined at the upper end, and the pulley shaft and first intermediate shaft trunnion, to allow reciprocation of the ram.

Provision is made for reversing the direction of rotation of the spindle to allow the use of either right or left hand face mills as desired. Change gears provide 30 spindle speeds. Ball bearings are used on all practical applications throughout the driving mechanism.

The manufacturer emphasizes the point that special care has been exercised in the selection and treatment of material with surfaces subject to wear in an effort to secure long life. Other points considered in the design include accuracy in alignment of parts, provisions for taking up wear and economy in the driving force.

It is pointed out that the mechanism necessary to provide for quick adjustment of the machine has been omitted, so that simplicity of construction and rigidity may be obtained. The machine is, therefore, a production miller, applicable in a practical way only to such jobs that by reason of the quantity justify the expenditure of the set-up time.

#### Electric Resistivity of Hardened Steels

Quantitative data and the rate at which the electric resistivity of hardened steel changes when the steel is reheated to a temperature as low as 100 deg. C., and even when standing at ordinary temperatures, are given in a paper by E. D. Campbell presented before the last meeting of the Iron and Steel Institute in London. A brief summary follows:

The steels experimented with contained 0.57, 0.76, 0.945 and 1.05 per cent of carbon respectively. were heated in an electrical furnace without oxidation to the desired temperature, and quenched in a large volume of water kept below 10 deg. C. by means of crushed ice. After the specific resistance had been measured, one set of bars was placed in an electrically heated drying oven maintained at a temperature between 100 deg. and 108 deg., and usually between 105 deg. and 108 deg. They were kept in the oven for three periods of one hour, one period of three hours and one of six hours, their resistance being determined after each period of heating. The total drop in resistance after the 12 hr. tempering was 2.01, 6.50, 9.01 and 10.54 for the four steels. The other set of bars was placed in a cylinder at room temperature, and covered with oil to prevent rusting. Resistance measurements were made at various intervals; and after two years the total drop was found to be 0.47, 2.31, 3.32 and 3.53.

In accordance with its custom for some years the Pittsburgh Foundrymen's Association observed ladies' annual night on Monday, May 19, when members of the association escorted their ladies to the Carnegie Institute of Technology in that city, where dinner was served, after which the guests witnessed a performance of Shakespeare's "Twelfth Night," presented by the students of the School of Drama. The June meeting will be in the nature of an outing, to be given at one of the country clubs, this also having been an annual custom of the association for some years.



# Improved Sine Bar

Owing to the demand for a tool which will accurately measure angles and also be readily and quickly adjusted, the Simplex Tool Co., Woonsocket, R. I., has placed on the market an improved sine bar. The user measures an angle by finding the sine of the angle to be measured, multiplying by five and adding the con-



By Using the Base as One Side of the Angle, This Sine Bar Requires the Setting of Only One Dimension

by hive and adding the constant which is stamped on the tool, then swinging down the arm, carrying the button until the measurement is obtained either by the use of micrometers, measuring over the base, or by gage blocks directly from the top of the base, and tightening the locking mechanism. Gage blocks for setting common angles without figuring are furnished if desired.

The advantages of this sine bar are pointed out as follows: There is only one dimension to set due to the fact that the bar itself is mounted on a base, the construction is such that it can be used against an angle plate or laid flat upon its side, some classes of small work can be clamped directly to the bar owing to the channel construction.

The clamping device for the bar is emphasized as a new method which locks the bar to the base with a strong centralized grip and at the same time without tendency to spring or move the setting of the bar.

#### Safety Work in Cleveland

The organization of the Northeastern Ohio Safety Council, working in co-operation with the National Safety Council, has been strengthened and put on a permanent basis. S. W. Tener of the American Steel & Wire Co. is the president, and A. H. Lintz, formerly assistant chief safety engineer for the Emergency Fleet Corporation, has accepted the appointment of executive secretary. Headquarters have been opened in the Cleveland Chamber of Commerce Building, and the program of the council is already in action.

It is planned to extend the work to all of industrial Cleveland. Already a school for safety inspectors, meeting one evening each week, with experts to handle the successive subjects, has been organized and is enthusiastically attended by a group of 150 men. Arrangements have been made to hold monthly luncheon meetings for executives with a speaker of national reputation at each of these meetings who will cover one of the important phases of accident prevention as well as the employees' industrial relation activities. Besides these, the secretary holds meetings in the various industrial plants for foremen or workmen as a means of furthering the safety work in their shops.

# New By-Product Coke Ovens Fired with Producer Gas

The Providence Gas Light Co., Providence, R. I., has recently put in operation a by-product coke plant of 40 ovens, built by the Koppers Co., Pittsburgh. The ovens are now being fired with producer gas in order to release for other uses the entire output of gas from the ovens. In this way a yield is secured of upwards of 11,000 cu. ft. of coal gas per ton of coal carbonized. This installation is interesting as suggesting to the iron and steel industry the substitution of blast furnace gas for coke oven gas in heating coke ovens. Thus the entire output of coke oven gas would be released for use in heating furnaces, soaking pits and openhearth furnaces. In other words, blast furnace gas

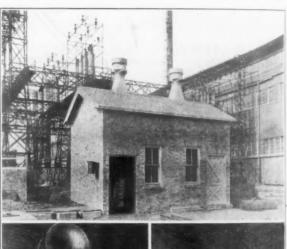
with a low heat value would be traded for sake oven gas with a heat content of 550 B.t.u. or more per cu. ft. It has been demonstrated in the operation of the Providence plant that as low coking time can be secured by the use of producer gas as when using toke oven gas for heating the ovens. Elsewhere it has been found that coke oven gas when combined with the coal tar secured from by-product coke ovens makes an excellent fuel for open-hearth practice.

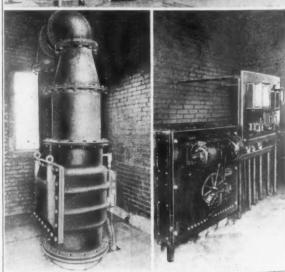
#### American Shipyards Make Record

American shipyards broke their building records in April, 1919, making 201 vessels registering 375,605 gross tons, of which 75 ships with 316,177 gross tons were seagoing steel vessels, 30 with 52,097 tons were wooden ships for sea service, and 105 with 368,274 tons were non-seagoing vessels. For the 12 months ending with April, this makes a total of 2092 ships finished in American yards with a total of 3,438,076 gross tons, the largest year's output ever recorded by the American yards.

### Thomas Meter Installed in Six Days

A quick delivery and installation of a Thomas meter was recently made at the new plate mill of the Brier Hill Steel Co., Youngstown, Ohio. On Jan. 10 a request was made of the Cutler-Hammer Mfg. Co., Milwaukee, for a 600,000 cu. ft. per hr. meter to measure the total supply of coke oven gas to six furnaces in the new plate mill. The company had the parts of a





Thomas Meter and Control Equipment Installed for Measuring the Coke Oven Gas to Six Furnaces at the New Plate Mill of the Brier Hill Steel Co., Youngstown, Ohio. The meter was installed and in operation six days after the order was placed

meter of about that capacity in such shape that shipment was made the following day. Work on the building and piping was rushed so that six days after the order was placed the meter was measuring gas to the mill.

#### German Offer to Sell Steel Plant

As indicating that German manufacturers are already putting out feelers for the resumption of trade relations with so-called enemy countries, The Iron Age has received a letter written at Cologne April 25 which has been passed by the base censor of the American Expeditionary Force. The letter is written by a metallurgical engineer who calls attention to "an opportunity to buy a German high grade steel plant for crucible and open-hearth steels." The plant is located near Cologne and is newly built but not entirely completed. Most of the buildings required for the rolling mill and an open-hearth plant have already been erected together with laboratory and offices.

The letter says that "the present owners of the works are something knocked down by the unfortunate end of the war for Germany but are business men of quality and would like to feel [probably meaning to sound] to buy the plant American businessmen of experience and capital under good conditions." It is stated that the products of this plant including high speed tool steel owing to their high quality and efficiency have been very popular in Germany and before the war, in continental industries, "and the buyers of the plant would have best opportunity to manufacture their own American steel brand." The amount of capital needed is put at 6 to 7 million marks.

The letter is among the first to come through from Germany to THE IRON AGE.

#### Decision as to Switching Service

Washington, May 20.—Corporations owning industrial railroad lines that are operated as common carriers are not allowed to receive switching service between their yards at less than other companies would have to pay, according to the ruling made by the Interstate Commerce Commission in the "Second Industrial Railways Case," which involved the Owasco River Railway, at Auburn, N. Y., belonging to the International Harvester Co. This railroad has a joint trackage agreement with the New York Central for a portion of the latter's track between two of the Harvester company plants, but also serves other industries.

The decision lays down a series of precedents to

cover industrial roads generally.

"We find," says the commission's decree, "that the Owasco River Railway is a common-carrier industrial line, and may participate in joint rates with and lawfully receive divisions or absorptions of switching charges from its trunk line connections, provided the divisions or charges are reasonable. The Owasco is entitled to a reasonable share of the through rates on the traffic which it handles as a common carrier. It is not entitled to earn out of the line-haul rates compensation for the interplant or intraplant services, as to which it does not act as a common carrier, or return upon the investment in, or value of, the facilities which are not used by, or open to, the public generally."

#### Enlarging List of Imports

WASHINGTON, May 20 .- Although the Federation of British Industries has protested against a too rapid removal of embargoes on importation, the British Government has found it necessary to continue to enlarge the lists of permissible imports. Much of this is due to the necessity for semi-finished material as well as of tools and machinery needed to speed up British industries. Among the latest removals from the import embargo lists, according to a cablegram from Consul General Skinner at London, are the following: Hand cultivators and other farm implements, fittings, pressure regulators, lubricators, grease cups; injectors and ejectors, pump and engine governors, pressure and vacuum gages, expansion joints of iron or brass; pressed steel union couplings, water-gage fittings, steam traps, metallic steam packing; brass wire, copper wire, copper-

clad wire, phosphor wire, coppered steel spring wire, tinned mattress wire, leading in nickeled copper, steel wire, coppered and flattened, wire rope; sockets, dropforged steel; copper rods and steel and iron wire rods; antimony, crude regulus, and sulphide and ampoule wires.

#### Fair Steel Business in Canada

TORONTO, ONT., May 19 .- Prospects for the sale of farm implements in Canada during the present season are declared by dealers throughout the country to be exceptionally good. Current business in the steel industry is not what might be termed exceptionally active, but the volume is sufficient to taboo the possibility of calling the market stagnant. Considerable delay is experienced in getting down to operations on a peace basis, and many reasons are advanced for this apparent holding back. The steel business has been somewhat stimulated by the opening of navigation and considerable movement of material is reported. There is a fair movement in structural steel, and it is expected that this will give greater confidence in other lines. There is a considerable amount of American machinery for sale in the Canadian market just now, and some of the Canadian dealers who are handling this equipment find that the discount that is against Canadian currency is rather a serious affair. In some cases the competition is very keen, and it is necessary that the price of the machine be brought down to a point where there is just enough profit to keep the things moving. Some of the Government Purchasing Departments, such as the National Railways, are showing a strong preference for Canadian made tools and are taking American tools only when they are unable to fill their wants from Canadian made articles.

#### New Boiler Plant at Youngstown

The Youngstown Boiler & Tank Co., Youngstown, Ohio, has been organized with a capital of \$50,000 to manufacture boilers, tanks and all kinds of plate work. The new company is building a plant in Youngstown, 100 x 250 ft., equipped with a 10-ton The building has been purchased from Harris Bros. Co., and the machinery from Joseph T. Ryerson, Chicago. Contracts have been let for all tools and equipment. The new company expects to be in operation in June, and reports it has enough contracts on its books to keep it in full operation for six months. It expects to employ about 100 men when running full. James P. Keene is president; William R. Kirby, vice-president; Charles R. Vogel, secretary and treasurer. All of the above were with the Sharpsville Boiler Works Co., Sharpsville, Pa., Mr. Keene having been general manager, Mr. Kirby general superintendent and Mr. Vogel was auditor for four years. The Youngstown Beiler & Tank Co. has acquired a very valuable site in the heart of Youngstown, and has plenty of ground to make extensions to its plant, should this be necessary.

#### New Canadian Steel Company

The Lake Huron Steel Corporation, Goderich, Ont., has been formed with a capital stock of \$15,000,000. The corporation has secured a site of 1000 acres in the north part of the town and in Goderich Township adjoining, which it is the intention to annex to the town. The company will erect a plant for the manufacture of high carbon steel for automobiles, motor parts, tractors, trucks, etc. It is the intention to bring ore from Lake Superior and Lake Michigan districts and turn it into finished steel at the plant. The manufacturing will be carried out by the electric process and a new hydro-electric line to furnish 25,000 hp. will be built. Among those interested in the undertaking is B. H. McCreath, Toronto, and associated with him is the industrial committee of the Goderich Board of Trade; J. W. Craigie, C. L. Moore, T. H. Mitchell, F. Woolcombe and Thomas Gundy.

wrenches and

small tools, straps for bolts, small levers, keys and

wedges; for forg-

ing, welding and

straighten-

ing rods and bolts; for sharp-

ening picks and

crow-bars and for

various odd jobs.

may be struck or

many in succes-

sion, either light

or heavy, at the

will of the opera-

tor. The distance

from the center

of the die to the

frame is 15 in., so

that large diam-

eter pieces up to

2 in. in thickness

can be handled.

Moving the foot

lever up or down

valve, which in

turn controls the

action of the ham-

mer. The rebound

of the hammer is

controlled by the

valve also, working with the air

manipulates

A single blow

# Power Hammer for Light Work

A power hammer has been developed by the Sullivan Machinery Co., Chicago, for doing mechanically with compressed air or steam work previously done by hand or by belted power hammers in blacksmith and forge shops. It is stated to be adapted for making, with rapidity, cutter bits with pick or chisel points, chisels,



Air or Steam-Operated Hammer for General Blacksmith-Shop Work. A long motion of the foot-control lever, with a short valve travel, makes for sensitive control

Some of this air or steam, held in the upper end of the cylinder, cushions the piston on the return stroke.

A heavy blow at full stroke is available, or the hammer can be throttled down by the valve action to a light tap.

Air is pointed out as being more advantageous as a motive power chiefly because of flexibility and ease of lubrication, also with air drive, the exhaust can be used to blow chips, scale, etc., from the face of the die.

The foot lever which controls the action of the hammer has a relatively long travel, whereas the valve travel is quite short. This is emphasized as resulting in close valve control, as the operator can feel the action of the valve with precision with this long travel of the foot lever. The hammer is rated as being capable of 600 blows per min.

The net weight of the hammer is 1675 lb. and overall height 6 ft. 6 in. The stroke is 5% in. and total striking weight 100 lb. A steam pressure of 80 to 100 lb. is required.

#### New Company Will Manufacture Arc Welders

The American Electric Fusion Co., Warren, Ohio, recently incorporated with a capital stock of \$25,000, was organized to manufacture electrical apparatus for heating, melting and fusing. However, the company will devote its attention for the present to bringing out a new type of alternating current arc welder. The welder will be built in a sectional form, the lower section containing equipment for transforming standard voltages, 440, 220 or other commercial circuits, down to 60 volts. The upper section will contain the stabilizing and regulating apparatus.

ing and regulating apparatus.

The entire regulation of current between 5 and 235 amperes will be controlled by four push-button switches giving current regulation in 5-ampere steps. The

welder will be built on a unit plan so that additional units may be added if required. All units will be interchangeable. A single machine will have a capacity of 235 amperes for one operator, but if a user has work that does not require this current he will be able by putting in plugs to change the machine into a 2-man outfit, giving each man one-half the current. The welder will be portable in form, and a single unit will weigh 260 lb.

The company has acquired a two-story building about 40 x 80 ft., at Woodland and Railroad Streets, which it will use as its plant. Fred P. McBerty, president Federal Machine & Welder Co., is president of the company; E. J. Henke, vice-president, and Z. A. McBerty, secretary and treasurer.

# Potash from American Blast Furnaces

The Bethlehem Steel Co., South Bethlehem, Pa.; the Thomas Iron Co., Hokendaugua, Pa., and the Tennessee Coal, Iron & Railroad Co., Birmingham, marketed blastfurnace dust for its potash content in 1917, according to the U.S. Geological Survey. The product contained 6 to 9 per cent of water-soluble potash and represented merely the dust that settles in stoves and boiler flues, where the blast-furnace gases are finally consumed. In a comprehensive paper on potash as a by-product from the blast furnace, R. J. Wysor estimates that in the Bethlehem steel plant 22.4 lb. of potash are charged into the furnace for each ton of pig iron produced, but considers that quantity above the average for the country. Charles Catlett, Staunton, Va., thinks that by selection of raw materials the potash content of the charges of some blast furnaces could be increased far beyond that reported at Bethlehem. If 20 lb. of potash (K2O) per ton of pig iron produced (a reasonable estimate from the data at hand) is an average of the whole iron industry of the United States, then 380,000 tons of potash was charged into blast furnaces in the production of 38,000,000 tons of pig iron in 1917. 50 per cent recovery, which is moderate compared with what some cement mills are doing, would result in the production of 190,000 tons of potash, or nearly 80 per cent of the normal consumption in the United States.

# Single Stroke Elevating Truck

An elevating truck having a lift of 2 in. with a single stroke of the handle is announced by the Lewis-Shepard Co., Boston. The capacity of the truck is given as 2000 lb., which is pointed out as being the

maximum load capable of being lifted with a single stroke without too great effort being required.

The truck operates without a release check. To raise the load, a foot pedal is pressed which engages the lifting handle with the load; to lower, a pawl is thrown back with the foot, but the load cannot be lowered until the operator then takes the weight of the load on the handle to control its descent.

The handle is free for steering, whether in an upright or steering



Elevating Truck Designed to Lift a Load of 2000 Lb to Height of 2 In. with One Stroke of the Handle

position and with the platform either raised or lowered. This feature is of particular value in connection with its use as a trailer.

The truck is made in various lengths and different sizes of wheels so as to fit wooden platforms that may already be made.

# Manganese Alloys in Open-Hearth Practice

Three Methods of Conserving Manganese in Steelmaking—Use of Silico-Manganese Recommended—Residual Manganese in Bath

A sthe result of a prospective shortage of manganese for steelmaking purposes early in the war, an investigation was inaugurated by the United States Bureau of Mines and the National Research Council to determine methods of conserving manganese in open-hearth practice in particular and in other practice in general. The work done was extensive and involved researches by many persons over a broad field. Some of the results are very important despite the fact that events have shown that manganese was more plentiful than at first feared.

At the February meeting of the American Institute of Mining and Metallurgical Engineers in New York a paper, "Use of Manganese Alloys in Open-Hearth Practice," was presented by Samuel L. Hoyt, associate professor of metallography, University of Minnesota, which was in substance a report of some of the results of this national investigation. Professor Hoyt, in the early part of his paper, discussed some of the difficulties encountered and the plan of investigation pursued as well as the functions of manganese in steelmaking. One of the objects of the investigation was the development of a method of utilizing as much of our domestic ores and alloys as possible. A result of the investigation as reported by Mr. Hoyt, was the offering of three practices for utilizing domestic alloys as fol-

The use of a molten spiegel mixture for deoxidation and recarburization.

The practice of melting and refining the steel bath so as to secure a comparatively high residual manganese content, about 0.3 per cent manganese.

The use of manganese alloys containing silicon

In selecting plants for investigating these practices, two points were kept in mind. The plant should have either ordinary practice, for the sake of comparison, or else one of the three just mentioned and the product or kind of steel made should be representative of the larger tonnages, such as shell steel, plates, sections, etc.

# Molten Spiegel Mixture Practice

The practice has been adopted, at a few plants, of combining in one operation both recarburization and deoxidation by using a mixture of pig iron and spiegel, which has been premelted in a cupola. This molten spiegel mixture contains from 5 to 11 per cent manganese, 4 per cent carbon, and the desired amount of silicon, and is added to the ladle during the tapping time in such a way as to get a thorough and uniform mixture of the two streams.

The principal advantages, not considering questions of plant and operating economy, are: A low-grade or domestic alloy can be used in the preparation of the mixture. The deoxidation is accomplished by means of a dilute solution with a consequent increase (on theoretical grounds) of the efficiency of the deoxidizer. The deoxidizer is added in the molten state, securing thereby the attendant advantages of this practice. The amount of the recarburizer is comparatively large and the capacity of the plant is materially (and economically) increased thereby; this is an advantage if a large steel output is desired. Compared to the usual practice of adding carbon and manganese, there should be less likelihood of missing a heat.

This practice, at least at the plant visited and it

is understood to be the same elsewhere, is limited to the manufacture of the high-carbon steels or those running 0.30 per cent carbon or above. To make steels with 0.20 per cent carbon would require the working of the carbon to about 0.10 per cent carbon and the molten addition would have to contain about 20 per cent manganese (spiegel). The amount of the addition would be reduced from 13,000 lb. (5896 kg.) to about 4000 lb. (1814 kg.) which would mean that some of the advantages just enumerated would decrease in weight and with the increased loss of manganese would probably mean that the practice would no longer be commercially feasible.

However, when the other alternatives, that is, the use of ferromanganese, either solid or liquid, is considered, the practice of premelting spiegel in the cupola would seem to commend itself as worthy of consideration. In case of undue shortage of high-grade ferromanganese, there can be no doubt but that the practice would offer a ready solution of the problem of using domestic alloys in making steel for shapes, plates, etc. Against the increased cost of production, compared to cold ferromanganese practice, there would be the greater uniformity of the product and the more uniform practice.

### High Residual Manganese Practice

At certain plants the practice of preferential oxidation and elimination of carbon and phosphorus has been developed by means of which the residual manganese is kept at a comparatively high value—about 0.25 to 0.30 per cent, as compared to 0.10 per cent manganese, for a final carbon content of 0.10 per cent. This is accomplished, broadly speaking, by rapidly removing the phosphorus and retaining it as stable calcium phosphate during the earlier and colder period of melting, by maintaining a high finishing temperature and working the charge with a high manganese content so that the slag contains about 8 per cent manganese, and by increasing the lime content of the slag to about 47 per cent as a minimum.

This practice possesses undoubted advantages but they are probably best appreciated by those who have developed the practice and have it in operation on a sound commercial basis. First of all, correctly applied, it leads to the production of high-grade and uniform steel, which means increased rolling-mill practice, fewer rejections, and a more ready market. This is largely due to the fact that the steel is made, where it should be made, in the furnace. A second advantage is derived from the high MnO and CaO contents of the slag; manganese finals can be added to the furnace with a recovery that compares favorably with that of ladle additions. A third advantage is that the same pig iron used for the charge, which contains appreciably more manganese than ordinary basic iron, can be used to recarburize and partly deoxidize the bath; the remainder of the manganese is added as ferromanganese. At a steel plant that operates in conjunction with a blast-furnace plant, a harmonious and economical cycle of plant operations is made possible. At the same time the open-hearth slag can be resmelted in the blast furnace for the recovery of the iron and manganese and the utilization of the lime.

This practice is largely dependent on the amount of phosphorus in the slag, for it would not be worth while to recover the manganese at the expense of unduly increasing the phosphorus content of the pig iron. In this country we are fortunate in having a large amount of quite low-phosphorus ore available. No definite figure can be given as to the maximum

allowable phosphorus content of the pig iron, but it is the opinion of at least one steel man who followed this practice, that 0.6 per cent phosphorus would not be

prohibitive.

Under the conditions that prevailed during the past year, this practice possessed the additional advantages that high-manganese pig iron could be secured by smelting domestic manganiferous iron ore and that the manganese alloy added to the furnace at the end of the heat could as well be spiegel as ferromanganese, assuming that the finished steel contains above about 0.10 per cent carbon. This would not be without its disadvantages, one in particular being that the carbon content of the bath would have to be worked to a lower figure than in present practice. On account of the high cost of spiegel and the greater time required, it is doubtful whether the steel plants will substitute spiegel for ferromanganese. Another point in connection with the possibility of utilizing domestic manganiferous iron ore is that low silica ore can be added to the slag as a source of manganese oxide.

The high manganese content of the charge is generally secured by using a high-manganese pig iron containing 2 or 3 per cent of manganese; but it may also be secured by adding manganese ore to the slag or manganese alloys to the bath or by a combination of these methods. This point would be determined by plant economy but it seems doubtful whether the practice would be worth while unless a high-manganese pig iron were available. One blast-furnace superintendent states that running the manganese up to 2 per cent does not materially affect the production, so that lowering of pig-iron production would not be held as a disadvantage in this practice. The loss of this manganese, by which is meant its oxidation and transference to the slag, is quite great. This loss may be kept at a minimum by increasing the basicity of the slag in CaO and FeO, which, combined with the MnO which also acts as a base, exert the desired effect on the manganese of the bath. As the working of the charge progresses, its temperature rises until finally, with the high CaO, and particularly MnO, content of the slag, the carbon is eliminated more rapidly than the manganese, with the result that the manganese can be held to about 0.3 per cent at the end of the heat.

Present data indicate, unfortunately, that no material decrease in the amount of manganese required and no material increase in the recovery of manganese in the additions may be expected, so that the advantages are derived not from a decreased consumption but from the form in which it can be added.

Data for one such heat showed that a total of 3728 lb. (1690 kg.) of manganese were used in one form or other to produce 1272 lb. (576 kg.) of manganese in the finished steel; or in other words that 2.93 lb. (1.32 kg.) of manganese were used to produce 1 lb. of manganese in the finished steel. The manganese added in the recarburizer and ferromanganese amounted to 1068 lb. (484 kg.) of which, assuming the manganese loss to come from these two sources, 838 lb. (380 kg.) were recovered in the finished steel, a recovery of 78.4 per cent. In this heat the ferromanganese was added to the furnace. Another heat selected at random, but more representative of standard practice, used 2190 lb. (993 kg.) of manganese to produce 1200 lb. (544 kg.) of manganese in the finished steel, or 1.82 lb. (0.8 kg.) of manganese (as compared to 3.54 lb.) to produce 1 lb. of manganese in the finished steel.

# Use of Manganese-silicon Alloys

The high silica content of most of our domestic manganese and manganiferous iron ores made it advisable to consider the possible use of manganese-silicon alloys in steel making, in both acid and basic practice. For the purposes of the present discussion, these alloys will be divided roughly into two classes, highgrade silico-manganese containing about 50 per cent manganese and 25 per cent silicon, and low-grade silico-spiegel with about 15 to 20 per cent silicon and 30 to 35 per cent manganese with 50 per cent iron. The man-

ganese-silicon ratio of the first alloy is about 2 and of the second alloy varies from 2½ to 1½. Both of these alloys contain very little carbon. The high-grade alloys would be made from the siliceous manganese ores of California and Montana, and the low-grade alloys from the siliceous manganiferous iron ores of Minnesota.

While there is nothing new about the practice of using manganese-silicon alloys in steel making," it may be well to review some of the points connected therewith in the light of present requirements. Silicon is always an efficient reducing or settling up agent when in the customary small amounts, but it may or may not be desirable in the finished steel. On this account the possibility of using manganese-silicon alloys depends on the amount of silicon that can be tolerated in the finished steel in the ingot form. In certain grades of steel, particularly in steel that must be welded, silicon should be low or practically absent. In steel for sheets and plates, which must give a good finished surface, most efficient rolling-mill practice requires that the silicon be kept tolerably low, but it is believed that from 0.10 to 0.15 per cent could be used provided the manganese were not too high. In forging steel, high-carbon steels, and castings where the aim is to produce sound steel, more silicon can be used, or between 0.20 and 0.35 per cent. Of these three fields, the last is the one where manganese-silicon alloys will find their first application. In the second field, it seems quite probable that conditions (to be discussed later) will many times permit their use; but from the very nature of things manganese-silicon alloys cannot be used to make steels of the first group,

#### Manganese-Silicon Alloys in Acid Practice

It is with considerable diffidence and hesitation that the discussion of manganese-silicon alloys in openhearth practice is approached, particularly as the controversial character of many of the points is so clearly recognized. So it may be well, at the outset, to state briefly the manner in which the writer became interested in the possibilities of their use. A number of years ago he was conducting a series of experiments on the occurrence and identification of foreign inclusions in acid open-hearth steel, principally ordnance steel. In this work ferromanganese, ferrosilicon, and a mixture of ferromanganese and ferrosilicon were added to a steel sample taken shortly after "oreing," that is, to "wild" steel, in an attempt to produce an excess of the constituent, or constituents, that were supposed to form as a result of the addition. It seemed fairly clear as a result of this work that the use of silicon was apt to be dangerous, not on account of any harmful effect of the residual metallic silicon but because it produced a constituent (assumed to be SiO, or at least a highly refractory silicate) that was very likely to remain in the ingot and produce hot short-This suggested the idea that a manganese-silicon alloy might, and probably would, form a manganese silicate containing some ferrous oxide (a true slag) that would be fluid and more readily coalesce into larger particles that SiO2, and, therefore, would free itself more readily from the steel. By using such an alloy, it would be possible to take full advantage of the use of silicon as a deoxidizer without suffering its None of the manusual attendant disadvantages. ganese-silicon alloy was available at the time, so a parallel experiment could not be conducted.

Aside from the possibility of securing a better separation of the insoluble products of the deoxidation process, it was assumed as likely, from the fact that binary alloys are known to be generally more active, or powerful, than the weighted sum of the two constituents would indicate, that the alloy of manganese and silicon would prove to be a more powerful reducing agent than ferromanganese and ferrosilicon used separately. On reflection the thought occurs that manganese and silicon, reacting separately with FeO, would produce the

<sup>\*</sup>It is understood that silico-manganese has been used fairly extensively in Europe, and in this country it was used at certain plants as standard practice until the supply was cut off by the war.

oxides MnO or SiO<sub>2</sub>, which may or may not form a solution of MnO and FeO or a silicate of iron. Manganese and silicon reacting as an alloy with FeO would produce a silicate of manganese, which may or may not form a double silicate with FeO. In either case we would expect to find the advantage in favor of the manganese-silicon alloy.

#### Recovery of Manganese

Another point of great technical importance is the percentage recovery of manganese when added as silicomanganese and as ferromanganese along with ferrosilicon. First of all let it be stated that a 100 per cent recovery, based on the present theory of deoxidation, is hardly possible; and if possible would not be desirable. It would mean a retention of the products of the deexidation, to be determined later as metallic manganese and silicon. A method of addition that would lead to a satisfactory deoxidation and yet would eliminate the loss due to admixture with the slag, volatilization, etc., and could be accomplished with the minimum amount of manganese, would be very desirable because it would lead to both conservation of manganese and uniformity of composition of the steel. The first of these points would be given by the actual value of the percentage recovery of the manganese and the second by the constancy of the percentage recovery.

Fortunately, the writer was able to examine records of heats made with silico-manganese covering a period of several years, from which some fairly satisfactory conclusions may be drawn bearing on these points. During this time when silico-manganese was being used there were periods when the alloy was not available and the ferromanganese plus ferrosilicon mixture had to be substituted. This afforded a direct comparison of these two methods of deoxidation. Certain results taken from the heat records and which are believed to be typical,\* are given in the table. Approximately, the silico-manganese contained 53 per cent manganese and 20 per cent silicon; the ferromanganese,

Table of Results of the Use of Silico-Manganese vs. Ferramanganese + Ferrosilicon

House.	PoSt, Lb.	FeMn, Lb.	SiMn, Lb.	Total Charge, Lb	C. Per Cent	Mn, Per Cent	Si. Per Cent	Mn Added, Lb.	Mn Recov- ered, Lb.	Per Cent Recovery
A B C D E		300 400 300 300 400		31,160 $40,765$ $30,620$ $30,910$ $40,865$	0.26 0.21 0.32 0.27 0.24	$0.56 \\ 0.57 \\ 0.63 \\ 0.70 \\ 0.72$	0.294 $0.306$ $0.312$ $0.318$ $0.312$	240 320 248 240 320	174 232 193 216 294	72.5 72.5 77.8 90.0 91.8
FGH		10 35 40 40 40	470 350 470 470 420	$\begin{array}{c} 41.010 \\ 30.685 \\ 40.960 \\ 40.510 \\ 36,760 \end{array}$	$\begin{array}{c} 0.22 \\ 0.26 \\ 0.21 \\ 0.21 \\ 0.24 \end{array}$	$0.58 \\ 0.60 \\ 0.64 \\ 0.66 \\ 0.68$	$\begin{array}{c} 0.308 \\ 0.302 \\ 0.310 \\ 0.308 \\ 0.310 \end{array}$	281 214 281 281 255	238 184 261 267 250	84.7 86.0 93.0 95.0 98.0

80 per cent manganese; and the ferrosilicon, 50 per cent silicon. The residual manganese was neglected in calculating recoveries.

It can hardly be claimed for these figures, or for the three years' records they represent with reasonable accuracy, that they furnish a truly scientific basis of comparison of the two alternate practices, but they do show that the same results (manganese and silicon contents of the finished steel), by using silico-manganese, can be obtained with consistently smaller amounts of both manganese and silicon, as compared to the combination of ferromanganese and ferrosilicon. In addition there is the advantage of having a more uniform practice, which in itself would warrant smaller additions. The weights of the additions favor the silicomanganese; thus in heats A, C, and D, 460 lb. (208 kg.) were added as compared to 385 lb. (174 kg. for G, and in B and E, 615 lb. (278 kg.) were added as compared to 510 lb. (231 kg.) in F, H and I. The low carbon content of the silico-manganese may or may not be a material advantage, but it is in favor of the single

\*It ambrious that the variation in heat composition and average manganese recovery of several years practice cannot be given by this table. The records show greater uniformity for the silico-manganese heats.

alloy addition because the carbon need not be worked as low and there seems to be less danger of missing the carbon.

#### Manganese-Silicon Alloys in Electric Practice

No information is available, to the writer, bearing on the use of these alloys in electric-furnace practice; but we may at least consider such a possibility on the basis of their known behavior. Considering acid casting practice first, there seems to be no reasonable doubt but that either silico-manganese or silico-spiegel could be at once substituted for terromanganese and ferrosilicon. Inasmuch as the usual aim is to make highgrade castings, the manganese-silicon alloys would appear to have the distinct advantage of making sounder and cleaner steel. Silico-spiegel, aside from possessing the theoretical advantage of being diluted with iron, could be more readily prepared with the correct manganese-silicon ratio so as to eliminate the use of an additional alloy. The uncertainty of our knowledge as to the relative behavior of the manganese-silicon alloys as compared to the ferroalloys, and the relative efficiency of low-grade and high-grade alloys, as well as the importance of this step in the manufacture of steel, suggest the advisability of conducting a definite research to settle the points. It would seem that there is no better place for such a research than in this particular industry.

In basic electric-furnace practice the manganesesilicon alloys, on the same grounds, could likewise be utilized, particularly as the attempt is always to produce sound and clean ingots. However, in this practice, ferrosilicon is used as a reducing agent along with coke and hence the operator would probably not see any advantage in changing his practice in favor of the manganese-silicon alloys.

#### Manganese-Silicon Alloys in Basic Open-Hearth Practice

The amount of information available on the use of silico-manganese in basic open-hearth practice is very meager, but it can be said that silico-manganese would probably be as satisfactory as ferromanganese and ferrosilicon. Through the co-operation of one steel plant, we were able to follow two shell-steel heats made with silico-manganese, which was added to the ladle. The second of these heats is given here to show what was done:

To 11.100 lb. (5034 kg.) of molten pig iron in the ladle were tapped 122,346 lb. (estimated) (55.492 kg.) of steel analyzing C 0.09, P 0.012, Mn 0.15, S 0.033, Si 0.02 per cent. At the same time 1000 lb. (453 kg.) of silico-manganese (50 per cent manganese), 300 lb. (136 kg.) of 70 per cent ferromanganese, 12 lb. (5 kg.) of aluminum, and 50 lb. (22 kg.) of coal were added to the ladle.

The heat was in excellent condition and the ingots had smooth, even tops and displayed no superficial action or evolution of gas. The final analysis was C 0.44, P 0.028, Mn 0.58, S 0.041, and Si 0.21 per cent. The recovery of manganese, assuming the entire loss to come from the alloy added, was 77.5 per cent.; the recovery of silicon was 65.1 per cent. Only 24 lb. (10 kg.) of carbon, or 5 per cent of the total, was lost. In the first heat, which was thought to be more highly oxidized, the recovery of silicon was only 58 per cent, while the recovery of manganese was only slightly less. This indicates that silicon protects manganese in oxidized heats.

According to information received by the Bureau of Foreign and Domestic Commerce, the directors of the Swedish iron mines have demanded a "revision upward" of the prices in their ore-delivery agreement with the Cerman iron works in the Rhenish-Westphalian district. They claim that conditions have altered so as to make higher prices mandatory. The agreement itself runs to 1930.

The Youngstown Boiler & Tank Co., Youngstown, Ohio, recently incorporated for \$50.000, is building a plant 100 x 250 ft., which will be equipped with a 10-ton crane. James P. Keene is president of the company.

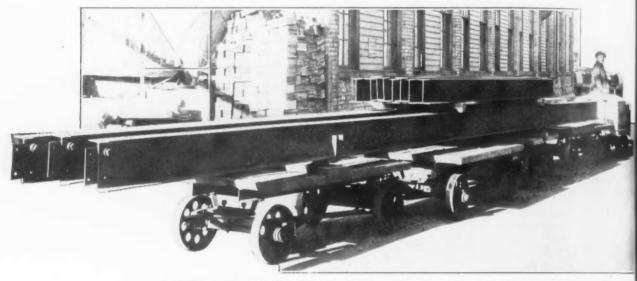
# INTER-SHOP TRANSPORTATION

Minneapolis Plant Saves 80 Per Cent by Using Tractors in Place of Teams Hauling Wagons

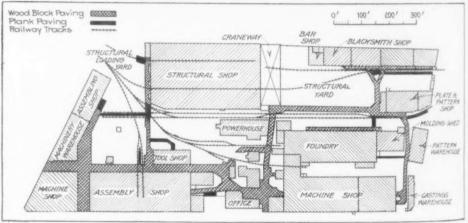
Nearly 80 per cent reduction in cost of intershop distribution of material has been effected, according to the Engineering News-Record, by the Minneapolis Steel & Machinery Co., by means of electric tractors and trucks operated on paved roadways under the control of a dispatcher system. The intershop service formerly was operated by 14 hired wagons and teams, each with a driver and two helpers, under the direction of a foreman and four assistants, making a total of 47

outdoor service. The sectional dispatchers are in charge of five designated portions of the plant and see that all incoming material is delivered promptly to the departments in their respective sections, and that finished material is removed promptly and dispatched to its destination.

With each movement there is a delivery slip showing the weight, pattern number, description, order number, by whom shipped and to whom and to which department the material is shipped. One copy is kept by the shipper, while the receiver keeps the second copy and signs the third copy, which is returned to the shipper. The lastnamed in turn sends the original slip to the chief dispatcher. From these slips a record is made at the end of each day, showing the material moved and the operat-



THIS TRACTOR WITH
TRAILERS REDUCED BY
NEARLY 80 PER CENT THE
COST OF TRANSPORTING
STRUCTURAL PIECES, ENGINE AND OTHER HEAVY
CASTINGS BETWEEN THE
SHOP BUILDINGS OF THE
MINNEAPOLIS STEEL &
MACHINERY CO.'S PLANT,
PLAN OF WHICH SHOWS
THE ROUTING BETWEEN
THE VARIOUS SHOPS



men. For 100 tons moved daily the cost averaged \$1.50 per ton.

By paving the roadways and organizing a dispatcher system to control the movements, the cost was reduced to about \$1 per ton. With the introduction of tractors hauling trains of trailer trucks, accompanied by further development of the dispatcher system, the cost was reduced to 31c. to 35c. per ton for a daily business of 200 tons and with a force of 14 instead of 47 men. The average daily mileage has not been determined yet.

It is expected that by equipping the tractors with recording speedometers the charts will permit close analysis of the situation and still further reduction of the cost by 5 to 8c. per ton, through the elimination of weak points in the service.

The intershop transfer system is headed by a superintendent, who has a chief dispatcher, assistant chief dispatcher, five sectional dispatchers, four tractor operators, one truck driver and one helper, a total of 14 men. There are three electric tractors, 53 trailers, one electric lifting truck and one motor truck equipped with trailer.

All movements of material are recorded by the chief dispatcher, while his assistant looks after the field or ing cost. Material is now handled more rapidly, while delays and losses in transit, formerly encountered, are eliminated.

Creosoted-block paving is used for the greater part of the paved roadways, which aggregate about a mile in length. The balance is of 3-in. plank. The width is from 16 to 27 ft. for the block-paved portion and 5 to 10 ft. for the plank paving. The only concrete paving is that inside the buildings. Two electric tractors weigh about 2400 lb. each and have a hauling capacity of 8 to 15 tons. The third tractor weighs about 2275 lb. and hauls from 6 to 12 tons. The plant investment of \$30,200 includes \$17,000 for paving. \$9,100 for trucks and \$4,100 for trailers. The only overhead figured in the cost is that which is sufficient for the operation of the trucks to cover repairs, renewals and depreciation, as the whole interplant delivery system is an overhead on productive labor at the plant. No comparison can be made between the present investment cost and that under the old system, as the company did not own the teams formerly used.

The new system was devised by George H. Ansonsuperintendent intershop transfer and warehousing department, and James B. Gilman, chief engineer.

### TECHNICAL READING

Various Plant Methods for Getting Maximum Benefits from Trade Publications

How can business periodicals be made of maximum usefulness in an organization? So inquires a subscriber to The Iron Age. He is familiar with several methods

and comments upon them as follows:

"Attach to each copy as it comes in, a list of persons who should read it and ask each one to check the list and pass the periodical on. One weakness of this is that all do not conform and the tendency is to have the periodicals congest along the line.

"Place the periodicals on the table and invite everybody to inspect, read and return. This is good, but it lacks a certain system and many who should read do not.

"Have some-

body read the periodicals, pick out certain articles and refer them to those who ought to be interested. In many ways this is good, but at the same time it places on one person the burden of judgment as to what will interest members of the organization."

A slip, form 357, is prepared by THE IRON AGE for attachment to every issue as it arrives at its des-tination. This bears the printed names of the several readers who are to receive the journal regularly in the order in which their names appear, and who are urged to read it promptly and pass it on to the next person on the list. A further reminder is given that on the slip pasted on the journal cover there is room under each name for inserting the page numbers on which the respective readers may have made notations on the page margins. The page numbers can also refer to memoranda written on separate sheets and "tipped in" or pasted where they belong by way of reference. These, as it is briefly mentioned, refer to items of note that the reader finds "have a direct bearing on our business, new sales ideas and 'leads'; or new machinery, tools, materials, etc., which might improve our output, appearing in either the editorial or advertising pages."

Lastly, there may be a notation printed on the slip as to further action. For instance, the last reader mentioned in the list may be directed to return the copy to the first one "who will give consideration to all

"who will give consideration to all suggestions before placing in file."

The Brown & Sharpe Mfg. Co., Providence, R. I., goes a step further than the use of this printed slip. An engineering assistant in the office of L. D. Bur-

lingame, industrial superintendent, regularly reads the journal and then fills out a card, as is here shown, and which was taken at random from the files. These cards are freely used for the benefit of the several persons who should study the articles recommended by the official reader. The one person charged with providing for accident prevention has all items on safety practices called to his attention. The same is done with other subjects and with other heads of depart-

ments.

The supervision of this system in a single department meets the objection first raised by our correspondent because arrangements can easily be made to have the journal followed up and moved along the line at specified intervals. Where further time is necessarv a return trip of the journal can be planned or a second copy pressed into service.

The chief engineer of an Eastern rolling mill goes even further afield. He reads and checks what has

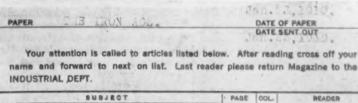
especial value from his point of view. Others are encouraged to do the same. Index cards are prepared to cover these items and he also has typewritten extracts made on 8 x 11-in. sheets. These are bound into books about ¾ in. thick, the sheets being punched and a stout cord holding them together. An extra sheet is inserted as a title and index page, at the beginning of the book. These books are in free use at the office, each bringing together within its covers much that has appeared in months or even in years of publication.

Placing the journal on a table, as is suggested by our correspondent in his second paragraph, has benefit but lacks system. Not a few plants put periodicals in the reception room, and so far as they are read there by the shop and office forces, this plan has advantages. But the circumstances seldom so work out in practice and the technical journal in such a location chiefly serves to pass the time, while the reader has obviously had another object in view; not by any means the most favorable condition for an examination of what is offered by the printed page.

A manufacturer of twist drills has a reading room off the cafeteria at his plant. This is not an uncommon arrangement, and might be easily made more useful than is sometimes the case.

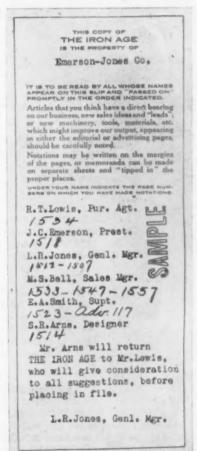
Already many plants have a librarian, whose duties include the preservation of technical literature

in the most accessible shape, and this officer can exercise a decidedly helpful influence upon reading and readers adjusting the one to the other in a way that it is highly satisfactory to say is being being done with increasing success.



TOBLEUS	PAGE	OOL.	READER
conversion of White Iron intr)	881	. 7	r.R.Soott.
" Foundry,			L.M. Shorwin.
Bralaine dont Past & Patore	237	1	A.R. Bulliton.
fraining Dept. in Factories	245	0	
Collective Bormlaing aules	141	1	
Dower Primes Prelicted	250	20	T.Howiff.
setting the wor mei to Roma be	253	1	A.H. Jainton.

Reading Slip Used by the Brown & Sharpe Mfg. Co.

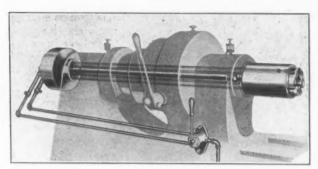


Sample Reading Slip Supplied by THE IRON AGE. Fifty-two slips printed with names and official titles are furnished on request

# Air Operated Collet Chuck

The Logansport Machine Co., Logansport, Ind., has added to its line of air-operated chucks an improved compensating collet chuck. The taper seat for the collet jaw is a part of the housing. This, it is pointed out, does away with the inserted steel rings commonly used, giving the advantages of a one-piece construction to the body with fewer parts.

The jaws are set into the body loose and held in position at the draw rod end by the taper on the draw rod connecting screw, and held expanded at the front



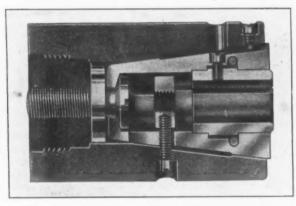
Air Operated Compensating Collet Chuck with Double Acting End Cylinder Applied to Turret Lathe

end by a spring. This construction, it is emphasized, permits the jaws to adapt themselves to different diameters with an equal and positive grip the entire length of the work.

The collet jaws have a travel of % in. when operated on full stroke, which can be reduced as desired. Drawing the collet back into the long slow taper gives a more powerful grip than a short and abrupt taper when operating at the same air pressure. Consequently a smaller air cylinder can be used, thereby effecting a saying in air consumption.

effecting a saving in air consumption.

These "Logan" compensating collet chucks are reg-



The Jaws of This Air Operated Compensating Chuck Are a Loose Float in the Body of the Chuck, Thus to Permit Adaptation to Different Diameters with an Equal and Positive Grip the Entire Length of the Work

ularly made in the two and three-jaw type, supplied with master collet jaws to which false jaw blocks for holding various forms can be fitted, in the following

sizes: 1½, 2½, 4 and 6 in.

The Frank G. Payson Co., 9 South Clinton Street,
Chicago, is the selling agent.

#### Report of Charcoal Iron Co. of America

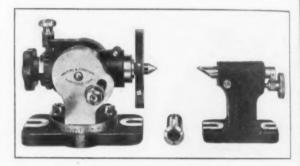
The Charcoal Iron Co. of America, Detroit, has enough contracts to take care of the output until Aug. 1, according to the annual report for 1918, issued jointly with that for the first quarter of 1919. At the signing of the armistice, the company had contracts on hand for 74,248 tons of iron at the Government-fixed prices. Says the report: "There has been a slowing up in the business, but so far we have been shipping iron out in good quantity, and in no month have shipments been less than 75 per cent of our production." The new Yale mine is now in operation. The shaft has been bottomed,

all equipment installed, a drift has been made 290 ft. from the shaft bottom to the ore body and there are approximately 90 ft. of the latter exposed. The company is commencing to raise ore at the rate of 1500 tons a day. In the words of the report, "the cost of sinking the shaft, installing the machinery and doing the underground development work was something over \$1,000,000, and we believe we have the most up-to-date and efficient mine on any of the ranges."

During 1918 the surplus increased \$198,488 after dividend, depreciation, amortization of war construction, Federal taxes, etc., and stood at Dec. 31, 1918, at \$1,742,380, which amount was added to \$233,807 during the first quarter of 1919, standing then at \$1,976,187. The period between March 31, 1918, and March 31, 1919, showed an increase in inventories of \$1,161,950, which was well distributed over entire operations and includes ore in the stock pile at the new mine. On March 1, the company put out an unsecured serial note issue of \$1,400,000. Other war-time products were alcohol and acetate of lime, the former finding ready market after the signing of the armistice, while the latter is being stored.

#### Semi-Universal Dividing Head

The semi-universal dividing head illustrated is a recent product of Whiting & Comstock, 32 Union Street, Hartford, Conn. The tool was designed primarily for



Dividing Head Designed for Use in Tool Rooms and Manufacturing Departments of a Factory

use on hand milling machines. The centers will swing work 8 in. in diameter; the head swivels 180 deg. in a horizontal plane and from 30 deg. above the center line to 10 deg. below. Standard equipment includes head stock, tail stock, head center, %-in. collet, four binder bolts and index plate with 24 divisions.

The Cannon-Stein Steel Corporation, Syracuse, N. Y., has been incorporated with a capitalization of \$25,000 to deal in tool steels, drill rods, alloy steels, cold-drawn steels, screw stock, shafting, etc. and has opened offices at 230 West Willow Street. It also will represent the Norwich Wire Works. The officers of the company are: President and treasurer, F. P. Cannon, formerly of Wheelock, Lovejoy & Co., and the Firth-Sterling Steel Co., and vice-president and secretary. William F. Stein, formerly of the Crucible Steel Co., and the Bethlehem Steel Co. and for the past three years superintendent of the North Mill of the Halcomb Steel Co.

The manufacture of heavy duty marine oil engines is announced by the Pittsburgh Filter & Engineering Co., Pittsburgh. The engines operate on the Hvid principle and will burn any grade of the cheaper fuels from kerosene to the heaviest of fuel oils. Cylinder frame and crankcase for engines including the four-cylinder size are cast in one piece; for the six-cylinder unit two three-cylinder frames are bolted together.

The LeMoyne Steel Co., Park Building, Pittsburgh, works near Monongahela City, Pa., manufacturer of high speed tool steels, has again put its plant in operation, after a shutdown of several weeks. Its plant contains a 2-ton electric furnace, and a 10-in. finishing mill.

# Prices on Navy Steel to Be Fixed Later

Assistant Secretary Roosevelt Announces Policy of Department—He is Hoping to See Lowering of Market Quotations—War Time Requisition

Washington, May 20.—The Navy Department's requisition of 13,225 gross tons of steel plates, beams, angles, tees and channels from the Carnegie Steel Co. for the four new battleships Nos. 49, 50, 51 and 52 raised many questions in Washington concerning the attitude of the administration toward industry in general.

The Navy officials disclaim any hostility toward the steel industry and specifically declare that the order must not be construed as reflecting in any way on the Carnegie company. They say that the use of the Government's war power of commandering offered the easiest way out of the difficulty of dividing the contract among 11 bidders who had handed in identical offers. The Carnegie company was the only one to bid on the entire schedule, and that is offered as the explanation of the selection of that company.

The question of the payment for the steel, however, is the chief difficulty, especially in the light of a statement by Acting Secretary Roosevelt of the Navy Department that he would fix the price "when the market gets lower." This left little doubt that the question of prices is the real reason for the department's action.

Under the terms of the requisition, the department will pay, at the time of delivery, 90 per cent of the bid price of approximately \$833,000 which the company had named in its offer. This amounts to \$750,000. The real price will be fixed later by the Navy Department, and if the company does not accept that figure it can go to the Court of Claims for the balance. The Carnegie Steel Co.'s bid was 2.65c. Pittsburgh on plates and 2.45c. on shapes.

"Who will fix the price?" Secretary Roosevelt was

"I probably will do that," was his reply.

"When?"

"When the market gets lower."

"Will it be based on the market prices as of the date of requisition or at the time of fixing the price?"

"It will be based on the price at the time I fix it."
"And if that should be higher than the present prevailing prices?"

To this final question Mr. Roosevelt merely shrugged his shoulders, but finally added:

"If the company does not like the price, it can always go to court for the balance."

#### Confers with Attorney-General

Before ordering the requisition, Mr. Roosevelt conferred with Attorney General Palmer on the subject, but it was insisted that this was only an unofficial inquiry. There is no doubt, however, that it had to do with the fact that it was the adverse opinion of Mr. Palmer destroying the Industrial Board that induced the latest Navy action.

The requisition of this steel ended a long series of efforts by the Navy Department to get the steel at the lowest possible price. The first advertisement for bids was made in February. At that time the various steel companies bid on the basis of the January prices. When the bids were opened in March, however, the Industrial Board had begun its "stabilizing" operations and there was a good prospect that steel prices would be the first to go down.

So the Navy Department threw the first bids into the waste basket and advertised again. This time the bids were opened April 4, and in line with the general experiation of the department they were identical as to price, naming the figures contained in the Industrial Board's schedule.

But the Railroad Administration was then at the height of its fight with the Industrial Board, and Attorney General Palmer had ruled the board's price

schedules to be a violation of the Sherman law. So the Navy again laid the bids on the shelf and waited. This time it had a longer wait, for the Industrial Board succeeded in hanging on until May 9.

Thereupon the Navy Department again asked for bids, this time by telegraph. But when these were opened May 13 they merely reaffirmed the April 4 figures, and again were identical as to all bidders—except that most of them offered only limited portions of the entire schedule.

Apparently this disappointed the Navy Department, which expected a cut in the Industrial Board schedule. So it cut the Gordian knot by ordering the steel requisitioned. To the complaints of other steel companies that they were thus left out of the market, the Navy officials have a stereotyped answer:

Navy officials have a stereotyped answer:
"You had your chance; you should have cut the
Carnegie figure by one-tenth of a cent per pound."

#### Regular Wartime Requisition

The requisition order for the steel was made on the regular wartime requisition form. The Navy Department officials say they have not had time to prepare forms to take care of peace requirements. As it is only under wartime powers that this requisition would be possible, it is difficult to see how a "peace requisition form" could be prepared. The requisition order served on the "Carnegie Steel Co., Wilkins Building, Washington," provides the following method of price fixing:

"As it is impracticable now to determine just compensation for the material to be delivered or services rendered, the fixing of the price will be subject to later determination. You are assured of just compensation under this order, and pending the determination of the final price you will be paid the provisional price stated hereon, with the understanding that such price paid will not be considered as having any bearing upon the price to be subsequently fixed. Any difference between the amount of such payment and the amount finally determined upon as just compensation will be paid to you or refunded by you, as the case may require. The provisional price stated herein will not prejudice any future price determination or be considered as a precedent in determining such increases or decreases as may be later decided upon as proper."

The order quotes the statutes under which this war power is exercised, the chief quotation being from the National Defense act of June 3, 1916, which declares:

"Sec. 120. Purchase or procurement of military supplies in time of actual or imminent war.-The President, in time of war or when war is imminent, is empowered, through the head of any department of the Government, in addition to the present authorized methods of purchase or procurement, to place an order with any individual, firm, association, company, corporation, or organized manufacturing industry for such product or material as may be required and which is of the nature and kind usually produced or capable of being produced by such individual, firm, association, company, corporation or organized manufacturing industry. Compliance with all such orders for products or material shall be obligatory on any individual, firm, association, company, corporation, or organized manufacturing industry or the responsible head or heads thereof and shall take precedence over all other orders . Any individual, firm, association, and contracts. . company, corporation or organized manufacturing industry or the responsible head or heads thereof, owning or operating any manufacturing plant . . . failing to comply with the provisions of this section shall be deemed guilty of a felony and upon conviction shall be punished by imprisonment for not more than three years and by a fine not exceeding \$50,000." o. F. S.

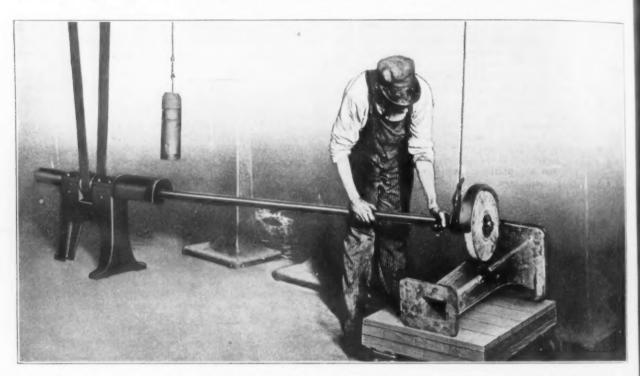
# Grinding Machine for Castings

The casting grinder illustrated is manufactured by the Grand Rapids Grinding Machine Co., Grand Rapids, Mich. The machine is intended for grinding gates, sprues, fins, etc., in the foundry and also for what might be termed the finish grinding, preparatory to filling and painting on castings where a highly finished product is demanded such as is required in the machine tool industry. It is pointed out that they are also suitable for work on steel billets and work of a similar nature.

The wheels can be quickly changed which makes it possible to use wheels with a round face or of a small

# Experiments on Coke Formation

Experiments by Georges Charpy and Marcel Godchot, described in the Comptes Rendus of Aug. 26, 1918, show how necessary or desirable it is to study the favorable coking conditions for every coal. Having made some general experiments last year, they proceeded to study mixtures, taking in the first instance a coal from Brassac, containing only 11 per cent of volatile matter, and a Durham coal with 24 per cent of volatile constituents. Mixtures of the two coals in different proportions were coked at 700 deg. C., and the cokes obtained were submitted to crushing tests; mixtures containing 25 per cent, 44 per cent, 51 per cent and 56



The Wheel Shaft of This Casting Grinder Is Equipped with a Universal Joint to Provide Motion Sideways and Up and Down It Is Also Free to Move In and Out. The weight of the wheel and shaft is carried by a counterweight through a %-in steel tiller rope passing over swivel sheave pulleys

diameter for reaching into corners, smoothing up fillets, etc. The base casting is carried on a three-point bearing to permit of mounting on a rough, uneven floor. The main spindle bearing is of the ring oiled type with a large oil reservoir, thus to provide satisfactory operation for long periods without attention.

The main spindle is of the hollow type in the form of a heavy steel sleeve with a key extending from the pulley through this steel sleeve into a long feathered key-way in an internal shaft which slides longitudinally in the hollow spindle. To the outer end of this central shaft is fitted a heavy universal joint of dust-proof construction and to this universal joint in turn is fastened the long rigid shaft which carries the grinding wheel. The wheel is thus provided with a swiveling action both sideways and up and down. It is also free to move in and out, thus covering a considerable area without the necessity of moving the casting.

The grinder regularly carries a 12 x 1½ in. face grinding wheel driven by a 3-in. double belt. From 5 to 10 hp., depending on the thickness and tension of the belt, is thus available. The manufacturer states that the heavy shaft which carries the wheel provides a type of drive which absorbs vibration and eliminates chattering and pounding to a large extent. This pivoting action also aids the operator in forcing the wheel against the work with the maximum pressure.

All revolving parts are protected so that there is nothing exposed to endanger the workman. The wheel shaft is inclosed in a pipe throughout its whole length.

per cent of the Durham coal gave cokes of strengths 24 kg., 45 kg., 80 kg. and nil kg. per sq. cm. Thus the strength of the coke increased to a maximum as more Durham coal was used, but dropped off suddenly when the percentage of Durham coal exceeded 51; alone the Durham coal gave a poor, friable coke, and the Brassac coal would not coke. The best average contents of volatile matter in this mixture was 19.6 per cent, and a mixture of Durham and Cardiff coals also gave its maximum strength (70 kg. per sq. cm.) for about 19 per cent of volatile matter. Tar and pitch were likewise used with good results to improve the coking properties of meager coal.

Another series of experiments was undertaken to ascertain whether low temperature distillation at 450 deg. C., followed by coking at 700 deg. C., would give good results. Again a curve with a decided maximum was obtained, demonstrating that in such operations the suitable temperature and duration of the heating period should be predetermined by careful experiments. When the distillation (at 450 deg. C.) was conducted for 0, 30, 90, 105, 120, 150, and 160 min., the percentages of volatile constituents remaining in the coal amounted to 28, 23.5, 21.6, 20, 18, 16.6 and 14.8; the subsequent coking gave a very friable product in the first three cases; in the other four cases the strength of the coke was 41, 97 and 25—very small.

Thus to obtain a good coke this Durham coal should not be heated to 450 deg. C. for more than 105 min.; too long or too short heating yielded a metallurgically poor coke. The question is whether the suitable conditions can be applied in practice; the paper does not indicate the scale on which the experiments were conducted.

# MANY MOLDERS STRIKING

### Labor Troubles in Detroit, Cincinnati and Other Centers

The molders' strike in the foundries of Worcester. Mass. continues with little change, after running for a fortnight. The only foundries operating without trouble are those of the Arcade Malleable Iron Co. and the Crompton & Knowles Loom Works, both of which are entirely on a piece schedule. The foundry of the Reed-Prentice Co, has relatively few men at work. This is an open shop plant, but many of the molders and other employees have been induced to quit work through the influences brought to bear upon them by the strikers, which influences savor of strong arm methods, for there have been several assaults. The same condition exists in the foundry of the Colvin Co. The 15 union foundries are closed.

Manufacturers who depend upon these foundries for their castings are not inconvenienced in any serious way. The close of the war found them with preparations completed for placing production on a larger scale than ever, and quantities of castings had been accumulated which were waiting to be used up when the strike was declared. Then, too, whatever castings are needed are easily procurable in other places. There seldom has been a time when a foundry strike caused less trouble

for owners and customers.

It looks very much as if the foundrymen would fight the strike to a finish, with the purpose of creating an open shop. It is also understood that the molders' union is by no means united in the desire to push the issue. The contest has come down to whether the foundries shall resume business under the domination of the union or as open shop. The question of hours and wages is secondary, and could be quickly adjusted, were it not for the open shop issue. The owners state that labor conditions in the foundries have become intolerable. Wages advanced sharply while the war was in progress; the jumps came along in quick succession. There was no hesitancy in granting the demands of the men. But with the return of peace conditions and the elimination of the element of duty to the country which made undesirable a contest for rights as between employer and employee, the owners appear to agree it is exceedingly important that the industry return to a position where collective bargaining shall no longer be compulsory.

#### Vacations for All Employees

All employees, including those paid by the month, day or hour who have been employed one year, will be allowed one week's vacation with full pay according to a plan announced by Eugene B. Clark, president of the Clark Equipment Co., Buchanan, Mich., manufacturer of internal gear drive axles and disc steel wheels for motor trucks.

The new plan goes into effect this month and includes mechanics, tool makers, foundrymen and all men irrespective of the basis of their employment. Heretofore this privilege has, as in other corporations, been granted only to officials and to the office and clerical forces of

The scheme is proving very popular with the men, and schedules have been worked out which allow the men in each department to plan the month and week of their vacation period in such a way as to prevent disruption of the production of the plant.

#### Strikes at Detroit

More than 900 employees of the Timken-Detroit Axle Co., Plant No. 1, Detroit, walked out on strike Friday morning, May 16. Several departments and the company's three other plants are unaffected. The International Machinists' Union, which is directing the strike, states that the employees are holding out for a \$6 minimum 8-hr. day. Company officials declare that recog-

nition of the union is the main issue. Some time ago the company adopted a plan of representation, under which the employees had a voice in determining under which the employees had a voice in determined what conditions they should work, and to provide for orderly settlement of differences. Officials of the company declare the present strike is an attempt to discredit this plan. The foreign elements in the factory make up most of the strikers. The company employs 3000

Four hundred common laborers, employed on construction jobs for the Saginaw Malleable Iron Co., Saginaw, Mich., and the Central Foundry Co., a subsidiary of the General Motors, went on strike last week for a 9-hr. day. The contractors are paying the men 571/2c. per hour.

# Molders' Strike at Cincinnati

The non-union foundries in Cincinnati and vicinity adopted the 8-hr. day with 9 hr. pay, and all of these shops are in operation. The union shops were unable to agree with their men and all of them are out with the exception of the stove foundries. At Hamilton, Ohio, five plants are affected, and at the present time there does not seem to be any likelihood of an early

#### Skilled Workmen Wanted

By the use of full-page newspaper advertisements combined manufacturers of Bristol, Conn. are inviting the skilled workmen of Waterbury to accept employment with them. Attention is called to the special train service with reduced fare, the attractive factory conditions and the community advantages. One of these advertisements has a symbolic border representing the links of a chain which connect with a picture at the top representing a line of factories. "Weld the Links of Success into Bristol Industry" is the caption, reading matter there is given a list of the labor requirements of several manufacturers.

#### In the World of Labor

Men employed in the safety department of the Sharon Steel Hoop Co., at the Hazelton and Lowellville, Ohio, works, started on an 8-hr. shift Friday, May 16, a change from 12 hours.

There seems to be little hope of a settlement of the wage demands of the union molders in Cleveland and a strike this week is regarded as probable. The men demand an 8-hr. day and a minimum 80c. rate. as compared with the present scale of \$5.50 for a 9-hr. day. A large share of the molders are on piece work and are at present said to be earning more than the scale demanded. Fourteen closed shops are affected by the demand and in case a strike is called, probably 5,000 men will go out.

St. Louis contractors and representatives of Structural Iron Workers' Local Union No. 211 of St. Louis have completed an agreement providing for a new wage scale and working conditions, through the assistance of James J. Barrett and F. J. Rohde, representatives of the Department of Labor. President P. J. Morrin of the Iron Workers also assisted in the negotiations. The agreement calls for 564c. per hr. for mechanics, 50c, for second-class mechanics, 40c, for helpers and an 8-hr. day. The Building Trades Council, St. Louis, has indorsed the proposition of the iron workers.

The strike of the 3400 employees of the Canadian Car & Foundry Co., Montreal, Que., is ended, and the men returned to work under conditions covering a 5-day week, 9 hours a day, and plans for closer cooperation between employers and employees by means of an industrial council within the company. Wages have been fixed at from 50 to 70c. per hr., time and a half for overtime and double time for Sundays and holidays.

# Supply and Machinery Men at Pittsburgh

Price and Loan Problems Discussed at Convention of Manufacturers and Dealers—President Humphrey, Westinghouse Air Brake Co., Tells of Plans for Great Steel Plant in India

HE American Supply and Machinery Manufacturers' Association and the National Supply and Machinery Dealers' Association held their annual meeting in the William Penn Hotel in Pittsburgh last Wednesday, Thursday and Friday. The sessions were very largely attended, nearly 600 delegates being present. Optimism was proclaimed by every speaker, and the view taken for the outlook for general business in the iron, steel, machinery and supply trades was most cheerful. It was pointed out by speakers that already there were strong signs of a revival in business, that would obtain its full sweep within the next 60 or 90 It was also the consensus of opinion among the delegates that the dissolution of the Industrial Board of the Department of Commerce is probably the best thing that could have happened, and will allow the steel trade to be carried on in the future in a natural way. It will be entirely free of all entangling alliances, and the delegates reported they were now better satisfied to try to do business with their customers and source of supplies under present conditions than they were before. There was also a strong feeling throughout the meetings that no material decline of prices on any manufactured products could reasonably be looked for while present high wages obtained, and there were no signs of any reductions in wages to come soon, but with every speaker, and also among the delegates, the feeling was strong that wages would practically be undisturbed for the remainder of this year.

#### Welcomed to Pittsburgh

An open joint session of the National Supply and Machinery Dealers' Association and the American Supply and Machinery Manufacturers' Association was held on Wednesday morning, with fully 500 members present. The president of the latter association, Melville W. Mix, Dodge Mfg. Co., Mishawaka, Ind., presided. Hon. E. V. Babcock, mayor of Pittsburgh, being in Philadelphia, helping to welcome home returning soldiers, his place was taken by Robert Garland of the Garland Mfg. Co., who very cordially welcomed the delegates.

President Mix of the American Supply and Machinery Manufacturers' Association responded to the address of welcome and touched briefly on the present general situation. He said that the steel trade, having been more active in helping to prosecute and win the war, had probably felt more keenly the decline in business since the armistice was signed than any of the lighter manufacturing lines. He said that any thought that wages and prices of material would get back to the 1913-1914 basis should be banished from the mind at once. He did not believe that there would be any serious reductions in wages this year, and that prices on manufactured goods were likely to remain about where they are.

President Mix was followed by President J. D. Nicklis, who also responded to the address of welcome of Mr. Garland on the behalf of the National Supply and Machinery Dealers' Association. He also stated that he did not expect any material decline in prices of their goods, or of wages during this year, and said he regarded the business outlook for the last six months of the year as most encouraging. He stated that already there were signs of a revival in business in the lines of product represented by his association, and advised its members to talk optimism as much as possible, and to try to instill in the minds of customers the fact that they will be practically safe in making purchases, as no serious decline in prices can be expected while present high wages remain.

George N. Peek, former chairman of the Industrial

Board of the United States Department of Commerce, was to have made an address, but owing to the fact that the board had been dissolved Mr. Peek sent a letter asking that he be excused from presenting his address, as he had retired to civil life, and could not speak in an official capacity. His place was taken by David A. Reed, a prominent attorney and member of the firm of Reed, Smith, Shaw & Beal, Pittsburgh, who was one of the counsel of the United States Steel Corporation in the suit entered for its dissolution by the Government. Mr. Reed has recently returned from France, and spoke very freely of conditions existing in France and Belgium. His subject was "The Attitude of the Returning Soldier to the Government and Business.' He stated that his observations were that 99 out of every 100 soldiers returning from France had a higher opinion of the United States and its government than before they went away. The French and Belgium governments seemed to be afraid of their people, and at present the taxes in France were very low, and were not large enough to pay interest on its debts, the Government evidently being afraid to charge as high taxes as were absolutely needed to meet the heavy French debt. He stated food regulations in France were ignored by every one, and the morale in that country He pointed out that the price of gasoline in France when he left was \$2.40 per gallon, and only millionaires were able to operate their cars. There was no Bolshevism among the returning soldiers.

W. M. Pattison, president W. M. Pattison Supply Co., who recently made a trip to Europe with some members of the Cleveland Chamber of Commerce, gave a very interesting talk on the impressions of his trip. He said that England is paying a service pension to discharged soldiers, and that many of these men are not anxious to go back to work while this pension is being paid. He referred to the high costs of living in France, and said that the cost of an apple was about 6 francs, or say \$1, as the French franc is now worth only 15 to 16c., instead of 20c., as formerly. He spoke of the devastation among the manufacturing plants in Belgium by the Hun, and stated that in one woolen factory in Belgium, which formerly had 840 looms, every one had been destroyed. Industry in Belgium is prostrated, and it will take many years for that country to rebuild.

At the afternoon session of the American Supply and Machinery Manufacturers' Association, President Mix made a short address dealing with business conditions, which he regarded as having shown some improvement in April and May, and which gave further signs of getting better right along. He said he was optimistic as to the outlook, and believed that inside of two or three months the volume of business would be heavy, and before the end of the year would be large enough to give full employment to all manufacturing plants.

#### Report on War Work

The report of Secretary-Treasurer F. D. Mitchell of the American association was in part as follows:

"The keynote of our last annual convention was war; to-day we acclaim peace and good will. November 11 saw us at the peak of war plans, but, thank God, it marked an abrupt termination of war. With intensive planning and work we had just completed our war machine when the armistice was signed. The war at an end, we scrapped our war machine without a single regret over lost money, time and energy.

regret over lost money, time and energy.

"After many preliminary conferences with the officers of the Hardware Manufacturers' Organization for War Service, President Mix appointed a war service committee which at once entered energetically upon its duties, and methodically and in a most business-like

way conducted its work. Their practical plans were ably executed by Robert E. Clarke, whom they engaged for that purpose. During the entire period of this work the major part of our office staff devoted practically all its time to helping with the details connected with this movement. A complete report of the work has been published in pamphlet form. Our war service work, by bringing together certain industrial groups for the first time, has appreciably benefited them and consequently raised to a higher level our entire industry."

Stephen C. Mason, president McConway, Torley Co., Pittsburgh, made an address on "Employment Relations from a Manufacturer's Standpoint." Some of the leading principles, advocated by Mr. Mason, and also by the National Association of Manufacturers, were set

forth by Mr. Mason, who said in part:

"It is essential, in order ta provide a more healthful atmosphere in the industrial world and to insure the success of the effort to reach and maintain a common ground, that the wage-earners and wage-payers be given the benefit of constructive, legitimate and impartial encouragement from the Government.

"Any organization which sets for itself the task, or any part of the task, of creating or sustaining an artificial or abnormal economic condition in American industry is certainly not working for the true and proper

interests of its members.

"In America to-day we hold the great responsibility of providing example for the rest of the world. Confusions and inequalities which developed during the war should be and will be eliminated.

"We must lend our every effort to avoid bitterness, acrimony or whining. Nothing is to 'e gained by either side, if there are sides, through cultivation, of misunderstandings. We must be mindful of public tension and public interest in working out our problems.

D. C. Williams of the Chicago Nipple Mfg. Co., in a very interesting address stated he had just returned from a business trip of about 10,000 miles in the East and far West, taken for the purpose of feeling as nearly as he could the business pulse of the entire country. He said his last interview was with officials of the National City Bank of New York, who assured him that the reports the bank was receiving from its correspondence all over the country were of the most optimistic nature. Mr. Williams also stated that he found optimism everywhere, and also the general belief that more material reductions in wages can come this year, and he predicted that in six months there would be a very serious shortage of labor in this country. He said reports at the Immigration Bureau in New York informed him that thousands of men were going back home every day, but there has been no immigration into this country for five years. He said, speaking for his own company, that its business in its first quarter of this year was very slow, but in April and so far in May, it had shown much betterment. Orders of his company in the first three months of this year were about 40 per cent of its capacity, but in April and May had gone up to about 70 per cent. Mr. Williams stated that during the great world war there were 7,000,000 men killed on both sides, exclusive of Americans, and that the foreign countries engaged in the war would all be short of men for a long time. said these countries in order to rehabilitate themselves would have to call upon America for their needed supplies. He believes that in six months the volume of business in this country will be very heavy.

# Mr. Hackett Says Outlook Is Bright

S. E. HACKETT, general manager of sales of the Jones & Laughlin Steel Co., Pittsburgh, who spoke

"The Steel Situation," said in part:

"When we consider that every man, woman and child in this country is a consumer of steel in some form, and that our pre-war consumption of finished steel products was 760 pounds per capita, we hesitate to set aside too generous an allotment for the foreign customer, notwithstanding the increased capacity of the past four years. Before the war, during the years of 1909 to 1913 inclusive, our exports in steel commodities averaged two and a half million gross tons per year. With our new agencies at work in foreign fields, it is reasonable to estimate that this tonnage can be doubled during the next five years, which will leave for home consumption 850 pounds per capita, not counting any additional steel capacity that may come in. This amount and even more will be required unquestionably to meet our domestic demands, checked and pent up as they have been for the past four years.

# Building Stopped

"For the past three years building construction in the United States, except for the War Department, has been practically at a standstill, and it is estimated the delayed construction program includes approximately one million houses, all needed immediately to meet the requirements of our people. Large sums of money have been appropriated for public improvement by the Federal Government and by the individual States. Best available estimates indicate that only 10 per cent of the fabricated jobs figured during the past 60 days have actually been closed and work undertaken. This is significant, because in my judgment 100 per cent of the jobs figured represent actual necessities and are only waiting for confidence to be established in to-day's

"The automobile industry to-day presents a bright They are going ahead and by mid-year will be operating near capacity. The shipbuilding program must proceed. Ships must be built. If our own Government or private ship owners do not keep our shipbuilding capacity fully employed, then foreign ship owners

"The position of the railroads as purchasers of steel

products is now better understood than ever before. We understand they have just entered the market for a considerable tonnage of rails and track supplies. But notwithstanding what their immediate purchasing policy will be, the fact remains that track materials of every type are needed and must be purchased. Present rolling stocks and motive power will not stand the strain of an active business season-so these can be added to the railroads' immediate requirements.

Manufacturers of agricultural implements and farm machinery can look forward to a large year, beginning this summer, for the farmer was never better able to buy than he is to-day and he holds a Government guaranteee that his purchasing power will not be impaired for another year at least.

"The condition of all the lines referred to, together with our export possibilities, presents a most promising prospect for an active period of new business.

#### Civil War Prices

"A comparison of the course of prices during the Civil War and the World War just closed, shows many points of similarity. The course of prices during the present period and the corresponding period following the Civil War, shows some points of similarity. In both wars building materials rose in price, but they did not at either time reach levels as high as the price levels of other commodities. At the beginning of the year 1865, the end of the Civil War being in sight, wholesale prices broke suddenly and violently to the extent of 27 per cent, while building material only declined 141/2 per cent as compared with present all round reductions in steel since last November of 14% per cent, But during the latter half of 1865 prices on wholesale commodities recovered from the low point until in January, 1866, they stood just 16 per cent below the level of January, 1865; while the price of building material advanced to war prices and remained there for a period of a year. Pre-war values, however, were not reached until 1878, or 12 or 13 years after the close of

the Civil War.
"We were gaining ground nicely during late January and early February. Then the United States Depart ment of Commerce came on the scene and not until March 20 did the Industrial Board come to an agreement with the steel industry. Following this arrangement on prices the Railroad Administration refused to buy at the figures named. The many conferences that followed, the press reports and editorials written on the subject of steel prices, have prevented buying except from hand to mouth. Much has been said and written about our getting back to the old law of supply and demand. This law is operating to-day, but those who prescribe this remedy as the best cure for hesitating business at this time have forgotten or do not wish to consider your most important issue and ours—the cost of production.

"Cost of production functions in the same capacity to-day and has the same relation to supply and demand as it did when bar products were selling at 1.10c. or 1.05c., with little business going. So unless your industry and ours are satisfied to dip into their reserves,

or a liquidation of labor is at hand (and these no one is contemplating), lower values are impossible.

"To-day the steel situation looks brighter than at any time since the close of the war. That untold business is dammed up in large volume, just waiting for the sound of the pistol, no one will deny. The price situation, which has been the one misunderstood factor, has been well aired, but has held firm. Not even the Railroad Administration could shake it, because it was established by a disinterested board whose object was the stabilization of our whole industrial fabric, based on the cost of production. The history of the steel situation from the signing of the armistice down to to-day, fairly judged by all precedents, does in itself establish the confidence necessary to open the gates and usher in the greatest era of prosperity, which is already in evidence, that we have ever known."

# Labor Problem Most Serious, Says President Humphrey

A T the Thursday morning session of the American Supply and Machinery Manufacturers' Association, A. L. Humphrey, president Westinghouse Air Brake Co., Wilmerding, Pa., made an address, his subject being "The Business Outlook." Mr. Humphrey stated he had been an active official in his company, and also connected with other concerns in Pittsburgh, for about 16 years, and he took pleasure in stating that Pittsburgh was very aptly and correctly called the arsenal of the world, having the credit of furnishing about 80 per cent of all the steel furnished by the United States during the war. Mr. Humphrey referred to the expansion of Pittsburgh industries, and of the Westinghouse interests, in which he has been active for so many years. He stated that great credit is due the workingman of Pittsburgh, as to his knowledge, there has been no cessation of work in any plant in the Pittsburgh district, making war essentials during the war. Mr. Humphrey is president of the Manufacturers' Association of Pittsburgh, which employs something over 200,000 men. The members of that organization recognize and act on the principle that a man is entitled to a full day's pay when he performs his work well, and as soon as the Government declared an 8-hr. day, Pittsburgh manufacturers at once adopted, and are now working on the same basis. said labor conditions were the fly in the ointment of the business situation to-day, and was the most serious problem by all means that confronts manufacturers at He referred to the street railway strike in Pittsburgh, which started at midnight May 14, and said it was an outrage that general business should suffer so much because of the unfair demands of the street He laid the responsibility for the railway employees. strike at the doors of the American Federation of Labor. claiming that organization had carefully made plans for securing increased wages for railway employees all over the country, and that Pittsburgh was selected as the easiest place in which to enforce these demands, and have the desired effect on other cities where strikes were contemplated. He said Pittsburgh manufacturers are not pessimistic, but are optimistic, and are laying plans for big business in the future, and that labor problems should be discussed in executive session by

representatives of the men and of the company. He advocated open shops all over the United States in order to successfully compete in all of the world markets, and stated that every plant owned by the Westinghouse interests is operated on the open shop plan. He referred to the fact that the United States will have to compete for export trade with the cheap labor in Japan and India, and stated that skilled workmen in Japan were paid only 24 cents per day and in India 18 cents per day.

#### Great Steel Plant Proposed

He said he knew of plans under way for the erection of a large steel plant in India to cost from \$50,000,000 to \$75,000,000, and that a prominent engineer had been retained at an almost unbelievable salary, to make the plans for the proposed new plant. He said that manufacturers should bend more energy upon securing the highest efficiency from their employees, rather than to pay more wages for impaired efficiency. He said that common labor was supreme in this country, and predicted a scarcity of it within six months, and when common labor advances, skilled labor always goes with it.

Mr. Humphrey believes that home conditions of workingmen had much to do with the present unrest of labor. He admitted that his own company, the Westinghouse Air Brake Co., had not given as much attention to home conditions and environment of its men as it should, and said it was going to give more attention to these matters in the future. He said very few of the industrial concerns had spent enough money to provide proper surroundings for employees, and that more money should be used in erecting comfortable homes for the men, providing them with amusements, also with good reading matter, instead of paying larger dividends He believes there will be a material change in these lines in the near future, and that employers were going to pay more and more attention, and also expend more money, in providing comfortable surroundings for their men, which he believed would do much to make them

# Price Guarantees Are Pernicious, Says President Ker

A T the afternoon session, Severn P. Ker, president of the Sharon Steel Hoop Co., Sharon, Pa., spoke on "Price Guarantees." Mr. Ker is an eloquent speaker, and held the attention of his hearers very closely. He said that price guarantees in any line of merchandise were largely a thing of the past, and that the desire of manufacturers for some time had been to get away from price guarantees, as they were regarded as a thing of evil. He stated this had been the policy of the Sharon Steel Hoop Co. and it had gradually reduced guarantee of prices to not over 30 days, and very soon would eliminate them entirely. He asked why any con-

cern that shipped a carload of goods to a customer should guarantee the price, when probably the customer had already sold the goods at a good profit, and in addition to this would have the benefit of any decline in price, should the market recede before the goods were delivered by the customer of the mill. He asked why should manufacturers advise jobbers to stock up on goods when prices were low, and then not have the benefit of any advance in prices that may come before these goods moved out from the warehouse of the jobber. He said the entire burden of the whole matter falls of the manufacturer, and he looked for the time when

contracts also would be entirely a thing of the past, and that jobbers and consumers would order goods as they needed them.

#### Stocking Up Jobbers

Mr. Ker stated that stocking up a jobber with goods did not in any way increase the demand, and simply allowed the jobber, in the event of a rising market, to benefit in the entire profit, instead of the profit of such advance being divided between the manufacturer and the jobber. Mr. Ker referred to the fact that when his company bought iron ore it contracted for a certain amount, paid for it whether pig iron went up or down in price, and never had any thought of making a claim for reductions in prices of ore, should prices of pig iron decline before the ore was used. He stated that price guarantees were pernicious in every way, and he hoped to see the day when they would be entirely eliminated. Referring to the labor situation, Mr. Ker said he thought this was more important just now than the subject of price guarantees. He believed that some serious problems were confronting manufacturers in all lines of goods, and that much of the unrest among labor is brought about by propaganda of labor organizations that is extremely harmful. Mr. Ker said he was always in favor of paying the highest rate of wage to workingmen, but did not approve of profit sharing. He believes that the sharing of profits among employees has the tendency of making them careless to some extent, and also impaired efficiency. He said there were three requisites necessary in order that a man could be successful, whether he was a common day laborer or a manufacturer, and these were honesty, industry and intelligence. He believes that not more than 50 per cent of employees are absolutely industrious, and not more than 25 to 30 per cent intelligent enough to take advantage of their opportunities, and make themselves more valuable to their employers. Mr. Ker does not believe that prices on steel products and other goods will come down very much for some time to come, and he expects wages to remain as they are, at least over this year. He said he did not believe that under normal conditions the Government had any right to fix prices at which manufacturers should sell their He referred to the recent advance in wages of railroad employees made by Director General of Railroads Hines, and said it would amount to \$65,000,000 per year. He said the action of Director Hines in refusing to pay the prices agreed upon for rails had brought about a condition of chaos in the steel trade, just at the time when it was showing every sign of betterment. He said business must be conducted by those engaged in it, and must be left untrammeled in every way. In closing, he brought a message of good theer to the manufacturers as regards the outlook, as he believes that within three or four months the volume of business in steel and in other lines will be much arger than at present.

James A. Emery, general counsel of the National Association of Manufacturers, made an address on "Combination and the Manufacturer," which closed the

afternoon session.

#### Conservation Plan Approved

At the Friday morning session, the first business presented was the report of the resolution committee, which submitted the resolutions adopted at the recent meeting of the Southern Supply and Machinery Asso-ciation at New Orleans. They were approved by the American Supply and Machinery Manufacturers' Asso-

Resolved, That after a full and open discussion by the members of the American Supply and Machinery Manufacturers Association meeting in Pittsburgh relative to present committions governing the manufacture of their several commodilies, it is the consensus of this association that, owing to the continued high costs of raw materials, labor and general overhead expenses due to low production, they cannot at this time see any probability of a decline in price in the near funce and with the desire, and this intent only, that the many jobhers, dealers, and distributors of their products should be fully familiar with these facts and, owing to the

impossibility of having a joint session at this time, it is fur-

Resolved, That the secretary of this association be and he is hereby instructed to send a copy of this resolution to the secretaries of the National Supply and Machinery Dealers'

Association and the Southern Supply Dealers' Association.

Resolved, That it is the sense of this meeting that the conservation program as arranged by the War Industries Board, and the conservation plans which were arranged by industries to submit to the board, should, in general, in the interest of economy, be encouraged and maintained, rendering unnecessary, as such a policy does, the carrying of large and varied stocks, the tying up of capital on the part producer and distributor, wholesale and retail, and if modifled, such modification should be passed upon by each branch of the industry concerned, and that a copy of this resolu-tion be submitted to the Southern Hardware Jobbers' Asso-ciation, the American Supply and Machinery Manufacturers' Association and the American Hardware Jobbers' Association for their concurrence

A resolution was adopted warmly thanking Hon. Robert Garland, chairman of the speakers' committee, for his services in obtaining eminent speakers.

#### Officers Elected

The nominating committee presented the following names:

President-George T. Bailey, Oliver Iron & Steel Co., Pittsburgh.

First Vice-President-Charles W. Beaver, Yale & Towns Mfg. Co., New York.

Second Vice-President -David C. Jones, Lunkenheimer Co.,

Third Vice-President-R. R. Sterling, Sterling & Skinner Mfg. Co., Detroit.

Executive Committee-S. Horace Disston, Henry Disston & Sons, Philadelphia, J. G. Doericks, Pittsburgh Steel Co., Pittsburgh; George N. North, Ferry Cap & Set Screw Co., Cleveland : Frank A. Morrison, Mason Regulator Co. W. Lomaux, Indianapolis Brush & Broom Mfg. Co., Indianapolis.

above-named gentlemen were unanimously elected to the respective offices, and George T. Bailey inducted into the chair as president. Melville W. Mix, Dodge Mfg. Co., Mishawaka, Ind., the retiring president, was presented by his fellow members three beautiful pieces of silver, in appreciation of his splendid service as president during the past year. Mr. Mix has served three terms as president of the association. Resolutions were also adopted by the convention commending in the highest degree efforts of the Pittsburgh convention committee for its untiring efforts in making the convention such a great success, both as regards papers presented and entertainment provided.

Stillman A. Benway, assistant director of United States Training Service, Department of Labor, then made an address, setting forth the efforts being made by the Department of Labor to training schools in various trades throughout the country for the securing of more efficiency among workingmen in all manufacturing trades. He referred especially to the training school recently opened at Lynn, Mass., for the instruction of male and female labor in the production of women's shoes, and stated that good results have already been obtained from this school.

The convention adjourned without naming date or place for the meeting next year.

# National Association Has Busy Sessions

Beginning the proceedings of the National Supply and Machinery Dealers' Association Wednesday after-noon, President J. D. Nicklis, Manning, Maxwell & Moore, Inc., in the course of his annual address, said:

"All that is necessary to-day is confidence that prices are right, that prosperity is coming and that business is going ahead. It is certain a demand for railroad equipment is bound to arise, and an early agreement on the peace compact will also prove a strong factor in hastening the return of normal business conditions. Reasonable caution, it would seem, should be displayed

# Italian Iron Ore and Pig Iron

The Italian Metallurgical Association has recently issued a memorial in which it is pointed out that the needs of the metallurgical industry in Italy cannot be indefinitely satisfied by the limited local supplies of iron ore to be found in the country, and recourse must be had, therefore, to foreign sources for the necessary raw and semi-finished materials. Prior to the war the iron mined in Italy came principally from the island of Elba, and from there was taken to the blast furnaces at Portoferraio, Piombino, and Bagnoli. Thus, for example, in 1914, of the total output of iron ore in the kingdom, amounting to 706,246 tons, Elba yielded at Between 1909 and 1914 about least 649,561 tons. 2,500,000 tons of ore was mined in Elba, and the output during the war has considerably increased. In 1916 there were extracted in the whole kingdom 942,244 tons, and in 1917 almost 1,000,000 tons of iron ore, the bulk in each year coming from Elba.

As, however, it will henceforth be necessary to exploit the veins reaching under the sea, and this will entail increased cost per ton, the island group can no longer be reckoned upon for large quantities. has stimulated research for other ore deposits in Italy. Although in 1909 there was known to be high-grade iron ore in the Val di Cogne (near the French frontier), estimated at 6,000,000 tons, its exploitation was only recently begun by the Ansaldo firm, which has installed electric ore-smelting furnaces modelled after Swedish types. Moreover, in the Nurra district of Sardinia the surveys made during the war have revealed the existence of about 6,000,000 tons.

The following figures give the present estimated reserves of iron ore in Italy: Traverselle, 1,000,000 tons; Cogne, 5,000,000; Central Italy, 2,000,000; Sardinia, 6,000,000, and Val Brembana, 20,000 tons; total, 14,-020,000 tons. If the present rate of Italian pig-iron output is to be maintained (about 400,000 tons annually), some 700,000 tons of ore will be required every year, and the ore reserves of Italy will thus be exhausted within a score of years. As a palliative measure, it has been suggested that greater quantities of scrap should be imported; the metallurgical association suggests 420,000 tons a year. In other quarters it is suggested to import iron ores and to smelt them in the

# To Sell Automotive and Hardware Lines Abroad

W. D. Blood & Co., Inc., 44 Whitehall Street, New York, has been incorporated under the laws of New Jersey, and will represent abroad a number of manufacturers of automotive and hardware products, as well as other lines. At present the company is acting for as other lines. At present the company is acting for the following: Metz Corporation, Waltham, Mass.; Corbin Screw Corporation, New Britain, Conn.; Hawthorne Co., Bridgeport, Conn.; Witherbee Igniter Co., Springfield, Mass.; Witherbee Storage Battery Co., Inc., New York, and L. F. Benton Co., Vergennes, Vt.

The president of the new company is W. D. Blood.

John C. Gallagher is secretary and treasurer. Mr. Blood was for seven years manager of the export Mr.

Blood was for seven years manager of the export department of the Hendee Mfg. Co., Springfield, Mass.

#### Large Output of a Monessen Blast Furnace

The Pittsburgh Steel Co., Pittsburgh, blew out its No. 1 blast furnace at Monessen, Pa., on May 1 for relining and repairs. The furnace has made a remarkable record for length of blast and output of pig iron. It was first blown in on Aug. 5, 1913, and the run was thus 5 years 8 months and 26 days. In that time the total production was 1,176,627 gross tons of basic iron, nearly all of which was used in the open-hearth steel plant of the company at Monessen. The consumption of coke in the entire period was 1,293,299 tons, or an average of close to one ton of coke to a ton of iron, which represents excellent furnace practice. The ore consumed in the long blast of the furnace was 2,355,445 tons. No repairs of any kind were made in the nearly six years of continuous operation, which is also an unneual record. In 1916 the output was 224,877 tons, or a daily average for the year of 616 tons. In March. 2919, in spite of the long use of the lining, the output was 19,848 tons, or an average of nearly 634 tons per day. J. C. Cromwell, Cleveland, was consulting engineer in the erection of the furnace. The fire brick for the lining was furnished by the General Refragtories Co. from its Olive Hill works.

# Japan's Steel Output and Trade

Statistics of the Japanese steel production and trade from 1913 to 1917, inclusive, are published by the Yoko-hama Chamber of Commerce Journal, and are as follows in metric tons:

	Output	Imports	Exports	Consumption
1913	254,000	543,000	33,000	
1914	282,000	408,000	29,000	
1915		243,000	25,000	
1916		454,000	19,000	819.000
1917	529,000	675.000	22 000	1.140 000

When the war broke out, as foreign supplies did not increase, the demand had to be satisfied by the home product. This gave a great impetus to Japan's steel industry. America began supplying Japan with steel only upon the stoppage of the English and German supplies. In 1914 imports from America were 68,000 tons. They rose to 133,000 tons in 1915, to 291,000 tons for 1916, and to 680,000 tons for 1917. Later the American supply fell off as a result of the United States prohibition of exports. Before the war the output of high-speed steel in the country was insignificant, and it was obtained chiefly from England and Germany. The war stopped the foreign supply while the Japanese demand increased. Several companies are now producing high-speed steel but, generally speaking, the products are not yet up to the uniform high standard required.

### To Sell War Scrap by Sealed Bids

WASHINGTON, May 20 .- War Department plans to sell 605,000 tons of steel and steel scrap by sealed bids were approved at a conference of a committee of the National Association of Waste Materials and representatives of the office of the Director of Sales. The committee asked the privilege of bidding on 31,907 tons of brass in form of ingots, rods and sheets, 33,000 tons field artillery cases and 2939 tons brass scrap in the shape of turnings which the Government has been trying to induce the brass manufacturers to take over. The waste materials committee thought the latter might offer better terms than the manufacturers because of their extensive markets. No decision was announced The committee also wanted the right to bid on aluminum and aluminum scrap, which the Government has similarly been trying to sell to the manufacturers. The committee said it would be difficult to find a market for 465 tons of cupro-nickel. It approved the department plan to sell Government copper stocks through producers, and suggested similar plans for the lead and spelter surplus. The committee consisted of Henry Leisberger, New York; Ivan Reitler, Chicago; Paul Lowenthal, Brooklyn; William Lewin, St. Louis.

#### Will Need Iron and Steel

WASHINGTON, May 20 .- The Bureau of Foreign and Domestic Commerce reports that the projectile factories of Italy are being converted to other uses and will be in the market for supplies. One is to build railway cars and will need steel, iron, copper, brass and aluminum. Consul S. H. Shank also reports that the street railway companies of Palermo are planning extensions which will bring them into the market.

Optimism prevailed at the recent spring sales conference of the Onondaga Steel Co., Inc., Syracuse, New Twenty-one representatives attended the dinner. Despite the dullness of the steel market, the plant of the Onondaga Steel Co. has been running at full capacity ever since the armistice was signed.

Apollo Steel Co., Apollo, Pa., maker of galvanized sheets, has added two new hot mills to its plant, to be put in operation about June 1, giving it a total of eight. It will increase its output of galvanized sheets to about 35 per cent by the addition of the two mills.

### CORRESPONDENCE

#### Italy's Experience with American Steel

To the Editor: With much interest I have read the article "Italy's War Buying of American Steel," by Lieut. Ernest D'Amico, in your issue of April 24. The author says that "we have no direct information as to the reception given in Italy to the American steel prod-I have this information from a good authority and am very glad to communicate it to you.

During the month of February the Fiat Co. of Turin, Italy, sent to this country a commission of its engineers to study American methods of production. Among them was Carlo Masera, who is chief of the steel foundries of the Fiat and who, I understand, is one of the best steel men in Italy. I had the pleasure of taking Mr. Masera through the most important steel mills and foundries in this country. It may also be of interest to state that he has designed a very efficient electric steel furnace, which in Italy is called the Fiat furnace and is used exclusively and successfully in their foun-

With reference to the quality of American steel products, he told me that the finished American products compared very favorably (with the exception of prices) with the products which they used to get from Germany before the war, but the raw materials which they received from America do not compare with those which they received from European countries. chief objection to the American pig iron bought for Italy it seemed to be that it contained a high percentage of copper. The vice-president of one of the large steel companies in this country, in my presence, asked him if there was any technical objection to this high percentage of copper. To this Mr. Masera could not answer satisfactorily. I got the impression that they objected to a high percentage of copper more as a matter of custom than on account of any unfavorable results.

I am very glad to state that these gentlemen urged the American manufacturers with whom they came in contact to see to it that henceforth the Italians shall find it more convenient to trade with America in preference to any of the European countries.

GIUSEPPE M. VALERIO.

Chicago, May 8, 1919.

# Essentials in Ordering Automatic Machinery

To the Editor: A man buying a lathe can send and obtain a catalog of sizes and prices, because a lathe is a machine that becomes adaptable for different work by reason of the brain which the operator is supposed to possess. In other words, the man does the thinking and adjusting. A chain machine is automatic-one man may run a dozen of them and about all he does, except keep the machine in running order, is to bring up new raw material, start and stop the machine.

The habit of asking for quotations on automatic machinery without regard to the exact specifications of the product is a source of great annoyance and delay to makers of such equipment. Automatic chain machines, for example, cannot be quoted offhand like potatoes. Here are the reasons: There are fully 100 different types of link, at least 50 standard sizes and a few dozen other sizes that represent the ideas of individual manufacturers or may be governed by the size of certain raw material which is easiest to get. Also, there are different degrees of temper, hardness or other quality in the metal used. Swedish iron, for instance, would not work the same as Alabama. A manufacturer of chain machinery has to allow, within reasonable limits for these things. It would be practically impossible to quote on every variation of chain that a prospect might have in mind. The manufacturer of machinery does not know what the prospective buyer has in mind, and after covering 40 or 50 pages would very likely

To get down to "brass tacks," a prospect ought to send a few links as samples. At least he ought to give a clear idea of the kind of link, the size and what he

wants to make it out of. The machine builder might figure on mild steel and the buyer would be thinking of gold watch chains.

Machines obviously can vary a great deal as to speed according to softness or hardness of the metal, and there might be other variations in the machine itself. A hard steel would require a different mechanical movement than a soft wire. The cost of the machine would be different accordingly. Of course, a certain allow-ance is made for slight variations in material, but an automatic that has been designed to handle a springy metal has a period of stop which would set the spring. It would not be economical to run soft metal through the same machine, though by making slight changes it might be done. Should a prospect wish to do this the machinery manufacturer ought to know his intentions so the machine design can be worked out properly.

Here is the point. A manufacturer wishes to make chain. He wants to compete with the regular market. He must make chain at as low a cost as possible. he selects his type, size and quality and the machines are designed for just that type and quality and size it is possible to run them at the highest possible speed, start new raw product in the quickest possible time, and in general get the greatest production at the lowest cost. Most manufacturers want just that thing, but the maker of the equipment is unable to give it to them if nothing is supplied in the way of specific detailed information to work on.

E. R. MINER,

Industrial adviser, Baird Machine Co. Bridgeport, Conn., May 19.

#### Building Shortage in the Far East

To the Editor: It may be of interest to the readers of THE IRON AGE to know that buildings, both for offices and dwellings, are as scarce in the Philippine Islands as in the United States and other parts of the world.

We have just received a letter from our resident manager in Manila, P. I., Charles A. Fossum, in which he states as follows regarding the scarcity of office space in that city:

I have been trying to get larger quarters for some time but up to this writing it has been utterly impossible to get any desirable space at any price whatever in Manila. Office space is even more scarce here than it has been in York, and it will be necessary to erect many new buildings here before the city will be able to take care of its growing business and population. It would appear that this city is in the same position as the United States, Latin America and Europe as regards dwelling houses, office space, etc., as very little new construction work of this kind has been going on for the past three years.

> CHARLES H. WILLIAMS, Secretary American Iron Products Co., Inc.

#### Converting Sheet Scrap Into Wire

New York, May 2.

To the Editor: In our factories we are producing a large amount of scrap, consisting of small pieces, straps, disks and threads of iron and steel plate (also tinplate), varying in thickness from 0.3 mm, to 0.5 mm., measuring from 2 cm. to 3 cm. in length and width to 53 cm. to 76 cm.

The value of this scrap is not much. It is usually pressed in packages and goes to the steel works. It resembles in bulk as it is lying in our yards masses of gigantic flax. This resemblance made us ask the question whether a machine has been or could be invented to treat this scrap iron as flax is treated in a spinning mill. Wire could be produced as thread and ropes are

May be you or one of your readers has heard of may be you of one interest us.

G. VanHouten,

N.V. de Vereenigde Blikfabrieken.

Amsterdam, Holland.

The Elliott-Blair Steel Co., Newcastle, Pa., maker of cold rolled strip steel and specialties, will rebuild its plant at Mercer, Pa., destroyed by fire about two months ago.

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# THE IRON AGE

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### Iron and Steel Prices

Bradstreet's index number is now almost exactly double its average during the ten years before the war, 1904 to 1913 inclusive. Dun's number is about 95 per cent above its pre-war average. Pig iron is only 70 per cent above its pre-war average, while billets are only 55 per cent above their pre-war average.

In THE IRON AGE of May 1 the views of O. P. Austin, statistician of the National City Bank of New York, were given as to the future of prices. Mr. Austin had studied the conditions affecting markets exhaustively, and his presentation is well worth study. He found that materials for which there was no particular war demand and produced far from the seat of war had experienced large price advances, even when prices were taken at the point of production, so that no freight on the goods was involved. Some prices had doubled, some had quadrupled. Mr. Austin cited that from 1913 to the present time in fifteen leading countries paper money (not counting the output of Bolshevik printing presses, of course) had increased from eight billion to forty-four billion dollars, thus being multiplied by five and one-half. Bank deposits in the same countries had increased from twenty-seven to seventy-five billions, thus being nearly tripled, and the increased deposits meant an increase in the circulation of checks against the deposits. National debts had increased from forty to two hundred and twenty billion, being more than quintupled, and the holders of the bonds could use them as collateral for loans, this in itself tending greatly to increase the circulation of money. When the governments must raise money by taxes to pay interest on their debts, and eventually the principal, they cannot be expected to take radical action in reducing the circulating medium. Accordingly Mr. Austin concluded that it would be unwise to expect any great or sudden decrease in market prices in general.

Thus there is good ground for holding that there is to be no great deflation in prices, while the comparison made at the outset shows that pig iron and steel billets are low relative to commodities in general. These facts cannot be ignored.

There is a psychology to the iron and steel market. There are some buyers in the iron and steel market who buy just as the individual buys collars, shoes or a meal, merely as he needs the things bought. If this individual thinks the price is too high, he hopes for a lower price at the time when he has occasion to make the next purchase. There are steel buyers, however, who consider the matter more extensively, just as one thinks more seriously when he buys a dwelling house or an automobile. Such iron and steel buyers are those who purchase as an investment, and those buyers must become accustomed to prices, must assure themselves fully as to conditions and prospects, before they take hold. When they wait before making purchases, it is not necessarily because they must have a lower price. The time may be required simply for them to become familiar with the new conditions.

There is one factor whose influence is rather intricate, the factor of there being a definite and precise schedule of prices. From one angle the price structure looks artificial, in that it is simply the war time schedule minus certain simple reductions. From another angle, however, the set schedule deserves some confidence from the very fact that it is a definite and well recognized one. A market price developed only yesterday or last week might easily change again in another day or week. It is not easy to determine from what angle the investment buyer will view this particular feature of the present situation.

#### Railroad Problem Must Be Solved

No one denies that the railroad situation is a serious one, but few seem to realize how serious it is. The Railroad Administration has not helped the general public to appraise the situation at its full by its suggestion that the difficulty with railroad earnings in the last few months is due largely to the lightness of the traffic. That is merely the near view. It is true that there has been a great decrease in traffic as compared with the traffic last year from July to October, after the general wage advance and the freight rate advance, and before the signing of the armistice, when the railroads did fairly well as to earning their guarantees. But on the other hand the traffic during that period was after all phenomenally heavy. The railroads hauled a great deal more freight than it had ever been supposed they would be able to handle, traffic being more than one-third greater than in the best year before the war. It would be a blunder, probably

to assume that the restoration of such a volume of traffic is probable, for moderately good times, and that such a traffic would give the railroads earnings not far short of what they need.

Late last year estimates were made that the railroads would fall less than \$200,000,000 short of earning their guarantee, but last week the Director General announced that the shortage for 1918 was \$226,000,000, while at the same time he estimated the deficit for the first quarter of this year alone at \$192,000,000. While the old Congress failed to pass an appropriation of \$750,000,000 to the revolving fund, the new Congress will probably be asked to appropriate \$1,000,000,000.

There is absolutely no prospect of railroad traffic being such, over a period of years, as to give the railroads respectable earnings if their charges remain as at present and if their expenses continue on to-day's basis. Yet there is no likelihood of any large reductions in the cost of materials the railroads must buy, and there certainly is no prospect of wage reductions. With the sharpest bargaining possible, the cost of coal to the railroads will probably be about double the pre-war average, for instance. The lowest figure the railroads have had in mind for rails would represent an increase of nearly 50 per cent over the pre-war cost. The amount that has been at issue between the Railroad Administration and the Industrial Board has been a matter of only a very few million dollars.

Further increases in freight rates seem absolutely necessary, and advances in passenger rates are not out of the reckoning. If such advances occur there will be two influences of no small importance. In the first place, coming on top of the stiff advances that the commerce of the country has already absorbed, they will exert an influence in the direction of maintaining the general inflation of values. Everything that stays up, or goes up, has a tendency directly or indirectly to support the general inflation. In the second place, while the paying of freights does not touch the sensitive nerve of the payer as much as the paying of taxes, still the influence is important. Men are more likely to inquire why they have to pay high freight rates than to inquire why they have to pay high prices for shoes or hats. The public, therefore, is likely to take more interest than ever in how the railroads are run and how the Government treats them. This influence upon the minds of the people will be of distinct advantage. Congress is likely to hear more from the people as to what it ought to do with the railroads, and Congress evidently needs to hear, considering its lethargy in the session that ended last March.

# Selling Machinery in Europe

Manufacturers in many lines of industry are studying carefully the possibilities afforded by the Webb law, and among those greatly interested are the members of the National Machine Tool Builders' Association, which has a strong committee appointed to study the question in its various phases as it affects the machinery business.

The feeling which members took home with them from the Atlantic City convention, last week, was that this trade would probably find it expedient to push its European trade in groups rather

than as a large body of manufacturers. Most of the builders have decided to continue their connection with the European machinery houses, as they were before the war. And these connections are very much the same as those with the American dealers who act as distributors. The dealer, European and American, plans to carry a complete line of metal working machinery, so that he is able to quote on a complete machine shop equipment. But he avoids competing lines. Seldom does he have among his new tools, as distinguished from second hand machinery, machines which are in competition, as, for example, lathes of similar price and scope of usefulness. He may carry several makes of lathes, but they differ in grade or purpose, overlapping to some extent, perhaps, but really not competitors.

Some of the European dealers make a specialty of American machinery, and with these houses many prominent machine tool builders have had very satisfactory relations. As a rule it has been found more economical to sell through them than in some more direct way. This is generally accepted as the best plan for attacking the situation abroad as it will exist in the reconstruction period. Possibly combinations of manufacturers may work effectively on this side of the ocean, perhaps in assisting in what promises to be difficult financing of foreign business; it may be through the effort to secure government cooperation. The demand from Europe for long credits must be met to some extent, it is argued, and the individual manufacturer cannot afford to grant any such terms as are now asked in all seriousness. There is work to do at home in building up foreign trade.

#### Manganese Conservation

Despite the unexpected strides made in the domestic production of ferromanganese and speigeleisen to meet war requirements, the movement set on foot to devise means of saving manganese in steelmaking gained considerable headway. Under the auspices of the National Research Council and the Bureau of Mines an extensive investigation was conducted, an abstract of which appears on other pages of this issue.

Fortunately, the results of this valuable research are based largely on practice in various American steel plants and are not entirely theoretical. The most important finding of the investigators has to do with the saving of manganese in the steel bath itself. Early in the war this possibility was indicated in these columns. It is now demonstrated that in basic open-hearth practice in particular it is possible so to manipulate the relation between the composition of the slag and the bath that before tapping a residual manganese content in the steel of 0.25 to 0.30 per cent is certain, as against a former loss of nearly two-thirds of this.

The importance of this advantage can scarcely be exaggerated. When it is appreciated that over 70 per cent of the steel output of the country in 1917 was basic open-hearth, the saving possible in manganese alone, if the practice were generally applied, is by no means a small item. But aside from this there is to be considered the assurance

of a better steel from the purifying action of the large amount of manganese present as well as the fact that the resulting slags, also high in manganese, can be and are being used as a source of manganese in the blast-furnace charge in producing a high-manganese pig iron, also necessary in the practice. Other minor advantages are the practicability of the use of domestic manganiferous iron ores in the blast furnace as well as the employment of alloys low in manganese such as speigeleisen to obtain the desired manganese content in the steel. Just such benefits have been obtained in some large American plants.

Another striking feature of the investigation is the result accuring from the use of silicomanganese alloys or silico-manganese instead of the two alloys to obtain the desired manganese and silicon content in certain steels, particularly steel castings. It seems to be established, in one case at least, that by using silico-manganese over a period of three years in acid open-hearth practice the same results can be obtained with consistently smaller amounts of both manganese and silicon as compared with the combination of ferromanganese and ferrrosilicon with the added advantage of more uniform practice. It is probable that this fact is applicable to basic openhearth and to electric furnace practice also. So promising seem to be the possibilities that further investigation and experimentation seem essential.

There is the danger now that these highly desirable possibilities may not be appreciated because of the abundance of manganese and the consequent lack of necessity for conservation. But if quality steel in quantity is to be the watchword in the American steel practice of the future, such changes in practice as are indicated by these manganese conservation methods should have serious consideration and adoption. The electric furnace in duplexing and triplexing has already made possible quality steel in quantity.

# Germany and American Patents

The patent situation as it affects the relations of American industry with Germany, and with Austria, also, is being studied with keen interest, and, it may be added, with much perplexity, by the American patent attorneys. The present and future interests of their clients are involved, perhaps in a large way. Apparently German attorneys are equally concerned, for some of them have already communicated with American patent firms with the hope of renewing connections which existed until severed by the war.

This patent situation is very highly complicated. Among other things, American holders of patents have not been able to pay their renewal fees required each year under both German and Austrian laws, nor have their inventions been worked in those countries, as required if protection is to be accorded beyond a limited period of time. Therefore, it is possible that all of these patents may be declared void, though this is not believed to be probable, for to take such action would be extremely bad policy.

The effect of the method adopted for handling German patents in the United States during the war will not be unimportant in its effect upon the future attitude of Germany. An act of Congress gave to Americans the right to secure licenses from the United States Government to work protected German inventions for the period of the war and for a period of grace following the making of the peace treaty, with certain definite provisions for the collection of royalty by the German owners later. It is said that 5000 licenses to work such inventions have been issued. Then, too, in looking into the future it must not be lost sight of that the alien property custodian has taken over the German patents, which, in itself, may have an influence.

Naturally, while the war was in progress, the Germans availed themselves of every invention of every nation, regardless of patent protection, where such invention was useful to them in the conduct of the war or otherwise. Perhaps the Germans, too, made provision for the payment of royalties when the use of an invention constituted an infringement. Then, again, perhaps they did not. It is presumed that somewhere in the treaty of peace a commission is created whose functions will include power to act on the question of patents as between the belligerent nations. No announcement to that effect has been made, so far as can be learned, and possibly patents may not be specifically named in the treaty. But the lawyers believe that the matter is one of too great importance to have been overlooked in the deliberations of the peace council, and that it will come within the scope of action of some body established by the treaty.

The German Government, whatever that government will be when the affairs of the nation shall have settled down to a substantial basis, will be glad to enter into a treaty which would renew reciprocal protection of patents on inventions. She will have a generous nation to deal with. The United States has been very liberal in its attitude as to patent protection granted to citizens of other countries, for no insistence is made on compulsory working of patents, in spite of the fact that practically every other nation includes that provision in its patent laws. As everyone knows, Germany, and Austria, likewise, have profited greatly in the past by this American protection, and no one doubts that their manufacturers and inventors will be glad to call bygones by-gones and demand of their government a patent treaty. Of course, American manufacturers and inventors will be equally anxious to secure protection in those other countries. But many tangles remain to be unsnarled before the skein of the patent situation is again in orderly shape.

# New Profit-Sharing Plan

In the distribution of money among employees under profit-sharing plans the apportionment is usually based upon the length of service or the earnings of the individual, or both, which naturally gives a wide range in the amounts awarded. The theory has been that a share in the profits should bear a close relation to the value rendered in production and in faithfulness and dependability as reckoned in years of employment.

The Endicott-Johnson Corporation, of Boston, one of the great American manufacturers of leather

and shoes, has just put into effect a system based upon an entirely different theory, in that all employees, no matter how high or how low their wage, will share alike in all profits above predetermined stock dividends. Superintendents and foremen and planners and high-salaried office men fare no better in dollars and cents received than the man who sweeps the floors and the youngest boy or girl in the office. The idea is almost revolutionary, and as such is attracting wide attention, especially because the business is a very large one, amounting to \$75,000,000 a year and employing many hundreds of workers. Therefore the experiment has an excellent field of trial.

The statement of the plan as made to the employees of the company explains that "in this our latest move one of our chief considerations is to maintain and safeguard their (the workers') interests and thus avoid any possibility of interruption in the conduct of the business from any cause. Invested capital and management of this business is entitled to a fair return from its risk and efforts. Labor is entitled to fair wages, good working conditions, reasonable hours and fair treatment." Accordingly the company announces the following plan: "Each year after a 7 per cent divident has been paid on preferred stock and 10 per cent set apart on the common stock, the balance of the profits, if any, shall be split 50-50 between the workers and the owners of the common stock. Every worker who has been in the employ of the company throughout the entire year will share and share alike, which means that the highest paid and the lowest paid worker, and all between, receive the same amount either in common stock or cash, at the option of the directors. Divisions made once a year. First division as soon as possible after Jan. 1, 1920." It is further stated that no worker receives a share of profits in January, 1920, who was not on the payroll Jan. 1, 1919, and this method of figuring will apply each year hereafter.

Should the employee become a holder of common stock in the distribution of profits, he would receive thereafter not only his share of surplus earnings as a worker, but his stock would receive its share of the other 50 per cent of such earnings. In this way earnings may be made cumulative. It is to be presumed that the company has reason to believe that earnings in good times will be sufficient to make the distribution worth while.

The generally accepted idea of a profit sharing system is that it should be made an incentive to those who plan and direct the work to procure the production of maximum results. The theory of the Endicott-Johnson plan is that all employees should have an equal incentive. As a partner, each worker is placed on the same plane as his foreman. Therefore he is less apt to waste and shirk; nor will he ungrudgingly see his fellows waste and shirk. The primary motive of an employer in establishing profit sharing is not necessarily selfish, for the average employer has the welfare of his workers at heart; but the economic side cannot be overlooked as it affects both owner and worker. In considering established systems of profit sharing in connection with this new plan, the matter resolves itself into the question whether best results can be obtained by centering the financial stimulus upon

# CONTENTS

Measuring to the Millionth Part of an Inch	1345
	1349
	1350
Corporation Schools to Consider Labor and Management	1350
	1351
'ombination Ladle and Truck	
	1357
Continuous Production Tilted Milling Machine	
Electric Resistivity of Hardened Steels	
Improved Sine Bar	
	1360
	1360
Thomas Meter Installed in Six Days	
Decision as to Switching Service	
	1361
	1361
Fair Steel Business in Canada	
New Canadian Steel Company	
New Boiler Plant at Youngstown	1261
Power Hammer for Light Work	1989
New Company Will Manufacture Arc Welders	1000
Potash from American Blast Furnaces	
Single Stroke Elevating Truck	
Manganese Alloys in Open Hearth Practice	1362
Manganese Alloys in Open-Hearth Practice: High Residual Manganese Practice—Molten Spiegel Mixture Practice—Use of Manganese-silicon1363-	
Mixture Practice—Use of Manganese-silicon1363-	1364
Inter-Shop Transportation	1366
Technical Reading Methods	1367
Air Operated Collet Chuck	
Report of Charcoal Iron Co. of America.	1368
Semi-Universal Dividing Head	1368
Prices on Navy Steel to Be Fixed Later	1369
Grinding Machine for Castings	1370
Experiments on Coke Formation	
Labor Situation	1371
Supply and Machinery Men Meet at Pittsburgh—Mr. Hackett Says Outlook is Bright—Labor Problem Most Serious, Says President Humphrey—Price Guar- antees Are Pernicious, Says President Ker., 1372	1274
Italian Iron Ore and Pig Iron. Large Output of a Monessen Blast Furnace.	1376
Large Output of a Monessen Blast Furnace	1376
Japan's Steel Output and Trade	1376
To Sell War Scrap by Sealed Bids. Will Need Iron and Steel	1376
Correspondence:	1278
Italy's Experience with American Steel—Essentials in Ordering Automatic Machinery—Building Shortage in the Far East—Converting Sheet Scrap Into Wire.	
Editorials:	
Iron and Steel Prices—Railroad Problem Must Be Solved—Selling Machinery in Europe—Manganese	
Conservation—Germany and American Patents, New	
Conservation—Germany and American Patents—New Profit-Sharing Plan 1378 Important Aftermath of Price Controversy.	-1380
Important Aftermath of Price Controversy	1382
Improvement in Coke Expected	1282
Mill Schedules Improve at Youngstown. Brass Manufacturers Meet Summer Meeting of Society of Automotive Engineers.	1383
Summer Meeting of Society of Automotive Engineers	1383
Boiler Manufacturers' Convention	1383
Iron and Steel Markets	.1384
Prices Finished Iron and Steel, f.o.b. Pittsburgh	1396
Non-Ferrous Metals	
Personal Obituary	1398
Lead of United States in Shipbuilding	1401
Says South America Will Favor British	1401
Tool Builders' Resolutions	1401
England as a Steel Competitor	1401
Meeting of the American Iron and Steel Institute Greater Activity in Structural Lines	
Machinery Markets and News of the Works	1403
New Trade Publications	1413
Current Metal Prices	1414

those who direct the work, or by distributing the stimulus throughout the organization. It is to be hoped the operation of the Endicott-Johnson innovation may be such as to give a definite basis for comparisons.

The National Pipe and Supplies Association, which met last week in Pittsburgh, elected the following officers: President, George Denny, Savannah; vice-president, Frank Sheldon, Boston; vice-president, W. E. Clow, Chicago; secretary-treasurer, George D. McIlvain, Pittsburgh. Directors: John Simmons, New York; Henry Gorton, Kansas City; George Puchta, Cincinnati; Harry Haldeman, Los Angeles.

# Important Aftermath of Price Controversy

Secretary Redfield's Recent Experience Convinces Him That Government Control of Railroads is Dangerous—Secrecy Prevails as to Bids on Rails

WASHINGTON, May 20.—The Railroad Administration is still playing hide and seek with the question of rail purchases. After three months of attempts to find a basis of rail prices in more or less co-operation with the Industrial Board, the Railroad Administration called for bids.

These were opened Saturday noon. All seven rail producing steel companies had submitted proposals. Apparently the expectation of the Railroad Administration that these would be below the Industrial Board's figures of \$45 and \$47 for Bessemer and open hearth respectively failed of realization. At any rate, the bids were kept secret. It is now expected that they will be presented tomorrow to Director General Hines when he returns to Washington. In the meantime, Henry B. Spencer, who is in charge of these purchases, declines to discuss any feature of the bidding. It is impossible here to verify the reports that the bids were made uniformly on the \$45-\$47 basis. Although they involved only 200,000 tons, the bids represent a serious situation in the whole question of

#### An Interesting Development

rail purchases, as they are looked upon as a forerun-

ner for heavy purchases. Until Director General Hines returns, it is not expected that there will be

any official announcement from the Railroad Adminis-

tration concerning its policy of rail purchases.

In the meantime, however, the fight between Director General Hines and the late Industrial Board of the Department of Commerce has developed an interesting result in President Wilson's cabinet. Secretary Redfield of the Department of Commerce has announced that the controversy has determined his opposition to Government ownership of the railroads, as well as the merchant marine and telegraph and telephone systems.

Secretary Redfield made this important announcement in an address which he delivered tonight before the Purchasing Agents' Association of New York.

In that address Secretary Redfield pointed out the perils of concentrating enormous purchasing powers in a single organization because of the possibility of its abuse to week the supplying industries

its abuse to wreck the supplying industries.
"I sometimes think," he said, "of buying power as a force which can be used constructively, as commonly used, with regard to and confined wholly to immediate transactions, and which may also be used destructively. Would not a great industry do well to use its purchasing power to develop new sources of supply, either looking to the increase of production of the articles it needs or to the development of satisfactory substitutes, or to making the certainty and security of its supply sure beyond doubt? Is it not possible to so extend the science of buying that it shall become a promotive force? There is more than one industry and doubtless some represented here whose relations with those from whom it buys are mutual and friendly, recognizing the common interest that in the long run does prevail and finding the results of that confidence as profitable as pleasant.

"It is, I think, germane to this thought to suggest that out of the helpful experience the Nation has had during the war and the readjustment period with Government operation of our great systems of intercommunication, whether on sea, land or by wire, a fact has clearly emerged which has peculiar interest for this assembly and which points a finger of warning for the whole country. I do not recall that this special phase of Government control of communication of all kinds was seriously discussed prior to the war, yet to my mind it is of basic importance.

"It has by itself settled my own judgment adversely to Government operation in a country as large as this of the great enterprises involved in our railways, our merchant marine, and our telegraph and telephone systems. I have called our experience helpful because through the work of the able and conscientious men who have handled all these activities more has been learned of the essential factors of the problems than was possible by pure theorizing. Nor is there in the background of my thought the smallest element of controversy. This is meant to be a quiet, dispassionate study of important current subjects, necessarily incomplete because of the limits of time and space. Nor is it meant to bear on or to remind of any phase of past, present, or future action but deals with general underlying facts. Nay let me go farther. I wish to express my full confidence in the honor, uprightness, and conscientiousness of gentlemen with whom I have recently differed. They acted as they believed was right and wise and are so to be esteemed and regarded. That water has run under the mill.

"The factor of which I speak is the necessary combination when under Government direction of so large a part-a controlling part-of the purchasing power of the country into a few hands or, regarding the Government as a unit, into one compact control. The various transportation elements named include as I have said a controlling purchasing power over our industries and through them over our labor and our producers of raw material. It would lie in their power to injure or even destroy not one but many industries simply by either refusing to buy or by delaying buying at a critical period or by insisting upon impossible prices, or impracticable terms. Most business men will, I think, agree that it might make relatively little difference to industry who administered the laws or even what the nature of those laws might be if power over the life and death of industry lay in the hands of a few men because of their ability to purchase or to refuse to purchase its output.

#### Hard to Control by Law

"This power, which is not so much by purpose as by its very nature autocratic would be peculiarly difficult to reach and control by law because it is impracticable to regulate by statute when or how buying must be done. Procedure can indeed be fixed: Publicity can be provided and competition secured in form. The danger, suggested, however, comes not from paying excessive prices but from the reverse, from forcing by the pressure of enormous buying power prices, terms, and conditions of such a character as substantially to put our industrial fabric into the hands of masters of almost imperial power. Let there be given any one of you ability substantially to control one-third or more of the coal purchases of the United States through your predominant power in buying fuel and that industry becomes plastic in your hands.

"Let there be placed in the hands of another of you the power to purchase from one-third to one-half or possibly more of the products of the steel industries or of certain portions thereof and that industry becomes your servant, to do substantially as you will. The same is true of other great industries like copper, the shipyards and the builders of machinery.

#### Railroads and Prosperity

"It throws light upon the possibilities that are suggested to read facts submitted by E. D. Leigh in his address before the National Industrial Conference Board in February last, published by him in a pamphlet dated March 12, in which he urges that railroad

purchases measure general business prosperity. His pamphlet is accompanied by a chart covering a period of 18 years which clearly indicates the relation of railway purchases to general business conditions and reaches the conclusion that—

Our non and steel industries have been developed to meet the railways' enormous requirements, and hence the railways have constituted the one industry whose purchases are upon such a scale as necessarily to affect the great barometer of non and steel.

"He proceeds to point out that buying is contagious and when initial buying takes place upon a large scale it stimulates greater buying. The current, as he suggests, proceeds out from the railways to car building plants, thence on to iron and steel plants and to the large number of railway supply industries. By these it is again directed to other industries which in turn influence a highly increased number of contributory interests, until the entire industrial machinery and

the labor employed in connection with it have been set at work.

"The possibility of favorable buying action thus existing in our railways becomes concentrated in the hands of a few when these great buying factors are unified under Government control and this power becomes again enlarged if to it are added the other great operating systems which are today or have recently been under Government management. It is evident that this power, mighty for usefulness, may be exerted either directly or merely by reason of its inaction as a destructive as well as a constructive force. In short, there here exists almost unnoticed heretofore a power before which the greatest trust is helpless, a controlling, restraining force in trade, beside which the greatest combinations are petty. It would be, or has been, country-wide, reaching into every city and by its infinite ramifications stretching out into substantially every industry and branch of commerce."

#### Improvement in Coke Expected

UNIONTOWN, Pa., May 19.—Policy of merchant operators of the Connellsville coke region apparently designed to force a \$4 price for spot coke resulted last week in 500 cars of coke standing on side tracks awaiting destination. All of that coke could have been moved at prices ranging from \$3.75 to \$3.90, it is said, but with the market in the consumers' favor, the operators apparently are seeking to land coke at \$4 as a starter for the period of prosperity which they believe cannot be much longer delayed.

So near do operators believe is the increased demand for coke that they are now banking their ovens for a week instead of putting them out entirely as was the custom when the curtailment policy was commenced. At the end of the week when the increased demand has not put in its appearance, the banked opens are blown out entirely and others banked. Merchant operators did not put out any ovens last week, but the Frick company placed 500 on the inactive list, banking most of them.

#### Mill Schedules Improve

Youngstown, Ohio, May 19.—Improved mill schedules are reported throughout the Mahoning valley this week. The Republic Iron & Steel Co. is operating six mills at the Deforest works, an increase of two over the week before. At the Brown-Bonnell finishing department the 8-in. mill, Nos. 1 and 2 10-in. mills, hoop mill and 10-in. skelp mill started Monday, as well as the Bessemer department. This is one additional bar mill over the previous week's program. The 20-in. bar mill at the Brown-Bonnell works of Republic resumed Tuesday, while the plate mill got under way Wednesday.

Four mills started Monday at the Haselton works of the Sharon Steel Hoop Co. The Youngstown Sheet & Tube Co. reports a number of additional units in commission this week. The Brier Hill Steel Co. is operating from 65 to 70 per cent of normal. One plate mill is idle. Carnegie Steel Co. departments here are operating about 90 per cent of capacity.

### Brass Manufacturers Meet

The National Association of Brass Manufacturers at its spring meeting held at the Hotel Cleveland, Cleveland, May 14 and 15, approved a general policy of reducing the number of patterns of various plumbing fixtures, and appointed a committee on elimination, consisting of representatives of seven of the leading manufacturers of plumbers' brass goods. Uniform standard weights on all forms of compression, fuller bibbs, plain and flange patterns, were adopted as provided for in the report of the standardization committee. A resolution was adopted to the effect that no freight allowance will be made on shipments of less than 200 lb., and when made to the jobbers home address, and fixing \$1.50 per cwt. as the maximum freight allowance. Reports from various mem-

bers indicated that they are very optimistic as to the business outlook. Many manufacturers of plumbers' brass goods are busy, and some others are planning to manufacture goods for stock in the belief that there will be a good market for them within 3 or 4 months. The next meeting will be held in Detroit, Sept. 17 and 18.

### Inspected Brier Hill Steel Co. Mills

Youngstown, Ohio, May 19.—Delegates representing the Association of Iron and Steel Electrical Engineers of the Cleveland, Pittsburgh and Youngstown districts met here Saturday, May 17, and inspected the electrical equipment of the new 84-in. and 132-in. plate mills of the Brier Hill Steel Co. In the evening a discussion was held at the Ohio Hotel, when various features of the Brier Hill installation were discussed. Officers of the national association who attended were D. M. Petty, Bethlehem, Pa., president; John S. Kelly, Pittsburgh, secretary, and A. H. Swartz, Cleveland, chairman of the entertainment committee. Barney Gilson, of the Ohio works of the Carnegie Steel Co., first vice-president of the association, assisted in entertaining the delegates. Power for the plate mills is generated by the Republic Railway & Light Co. at a central station 17 miles away and carried over a high tension system.

## Summer Meeting of Society of Automotive Engineers

Plans are being completed for holding the summer meeting of the Society of Automotive Engineers at Ottawa Beach, Mich., June 23 to 27. All professional sessions will be held in the morning, with afternoons free for recreation and diversion. During the evenings there will be lectures or informal talks on scientific but semi-popular topics of interest not alone to engineers but also to members of their families and guests.

#### Boiler Manufacturers' Convention

The thirty-first annual convention of the American Boiler Manufacturers' Association will be held at Lafayette Hotel, Buffalo, on Monday and Tuesday, June 23 and 24.

This association consists of all builders of highpressure steam boilers, of both water tube and fire tube types. An interesting program has been arranged. Full information can be had by addressing H. N. Covell, secretary, at 191 Dikeman Street, Brooklyn, N. Y.

The Champion Engineering Co., Kenton, Ohio, has appointed the Williams & Thomas Machinery Co., Inc., with offices at 829 Commercial Trust Building, Philadelphia, exclusive agent for Champion cranes in that territory. R. F. Williams, president of that company, who has had extensive experience in crane sales engineering work for a number of years, will be in direct charge of the company's affairs in that territory.

# Iron and Steel Markets

## BUSINESS PICKING UP

Better Feeling Converted into Orders

Southern Pig Iron and Export Plates Shaded— Rails Higher Than \$45

Though a measurable volume of business now marks the recent ushering in of Government-free trading, nowhere can it be said that the long awaited buying movement is under way. Weighing our various reports the conclusion is forced that pressure is gathering to such an extent that heavy purchasing cannot be long delayed.

Concessions in price are unquestionably being made in both iron and steel, but there is no general break from what are regarded as market levels and few of the changes as yet establish a new price. There is no frantic endeavor to get business at

keenly competitive prices.

Exceptions in the matter of price reductions are found in cast-iron pipe and Alabama iron. Pipe has been reduced \$5 per ton at Chicago, and East-ern shops are expected to follow. Birmingham confirms the general report that Southern makers of pig iron are willing, where the quantities under inquiry are sufficiently large to absorb more or less of the freight charge and thus put their product on a competitive basis. From Chicago it is reported that at least one Southern producer is willing to waive the freight, in this instance \$5. Meeting Ohio competition, a round tonnage of Southern was placed in Louisville at around \$24.50 f.o.b., Birmingham.

In Southern territory the market price is adhered to. In the East basic iron has brought the full price, but foundry grades have been shaded, frequently through the seller's assuming a part of the

freight

Production in the Mahoning and Shenango Valleys, as well as in Pittsburgh proper, is put at a

rate less than consumption.

Government offerings of surplus low phosphorus pig iron have been disturbing. Buyers are found with difficulty, as most users of such iron were left with large stocks or obligations when the war ended.

The better tone in pig iron is reflected in steel. The Government has made no award of the 200,000 tons of rails for which it made inquiry, but wide variations are reported in the quotations submitted. The leading interest is said to have named \$45 on Bessemer and \$47 on open-hearth rails, against which four independent rail mills are mentioned as quoting higher, one asking \$55 and \$57.

A new note is the willingness of some consumers now to enter into contracts for the third quarter. Protection against price decline are in most in-

stances refused.

The most striking cut in steel, changeable however to securing export trade was in 3000 tons of plates for locomotives for Italy. A large proportion of the business was placed among four companies at 2.50c., Pittsburgh, or \$3 per ton below the domestic level. One company took a portion of the order at a price which nets it 2.62c., mill. An exporter has received a quotation of 2.45c. on 1500 tons of plates for China.

Other price concessions on steel products are relatively unimportant, consisting mainly of waiving of certain extras, though 10,000 tons of rails for the Far East has been placed at a price less than the \$55-\$57 scale recently quoted on export inquiries.

Structural steel lettings in the East during the past week have aggregated nearly 10,000 tons, and demand is looking strong in the Central West and in Canada. The report of the Bridge Builders and Structural Society for April shows bookings amounted to 24½ per cent of capacity, a gain of 40 per cent over March, but of course activity is much below the normal.

Japan will require 2,000,000 tons of plates for

200 ships in contemplation.

As supporting the general favorable trend, bolt and nut makers report an increase in business, with substantially no price shading. More consumers are willing to contract for the third quarter.

Sheets are a little more active, Chicago reporting 2500 tons of galvanized being placed at the

market for export.

Scrap markets, a leader in both declines and advances, generally show a better feeling.

The War Department is putting shell steel on the market as scrap at different points where it is obtainable in quantity. It is now advertising for bids on 30,000 tons of ingots and forgings at two Michigan plants.

# Pittsburgh

PITTSBURGH, May 20—(By Wire)

Any expectations on the part of jobbers and consumers that further reductions in prices are likely to be made by the mills will hardly be realized. It is possible that some slight shading in prices may occur here and there, but the fact remains that sentiment in the steel trade, not only among the producers, but with the jobbers and consumers as well, is more optimistic at present than it has been at any time since the slump in the steel trade started after the armistice was signed. Labor is a large part of the cost of making steel, and there is no thought on the part of employers at present of making any cuts in wages, at least during this year. Hence, if this position is maintained there is little probability of much lower prices on steel Weekly letters sent out than are now being named. by the large steel companies in the past week to their various sales managers all over the country contain a strong tone of optimism and do not indicate any reductions in prices; in fact, with only a slight increase in some mills take the position that prices on some of their products, which are now at cost, or lower, may soon show a sharp advance.

The amount of optimism existing at present is really remarkable, in the face of the pessimistic attitude of consumers and jobbers that existed less than a month ago. Projects that were put off early this year, in the belief that prices of steel and labor would be much lower, have again been revived, and while not actually placed there is more probability of their coming out in the future than at any time for five or six months. It is pointed out that railroads need hundreds of thousands of tons of steel rails and other track supplies, also steel cars and other rolling stock, and at least part of this business is certain to be placed this year. The inquiry of the Government for 200,000 tons of rails, bids on which closed May 17, is regarded as only a forerunner of still larger purchases of rails and other sup-

# A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

#### For Early Delivery

May	0. May 13, .	Apr. 22. M	lav 21	1	100 20	May 13.	Apr 99	Mac 21
Pig Iron, Per Gross Ton: 1919		1919	1918	Sheets, Nails and Wire.	1919	1919	1919	1918
X. Philadelphiat \$29.	0 \$31.90		\$34.25	Per Lb. to Large Buyers :	Cents	Cents	Cents	Cents
No 2 Valley furnace† 26.	5 26.75 3 30.35	26.75 30.35	33.00 35.90	Sheets, black, No. 28, Pgh.	4.35	4.35	4.35	5.00
Birmingham, Alat. 26.	5 26.75	26.75	33.00	Sheets, galv., No. 28, P'gh. Wire nails, Pittsburgh	3.25	5.70 3.25	5.70 3.25	6.25 3.50
No. 2, furnace, Chicago* 26. Basic, deliv., eastern Pa 29.	5 26.75 5 29.65	26.75 29.65	33.00	Cut nails, Pittsburgh	4.25	4.25	4.25	4.00
Busin, Valley furnace 25.	5 25.75	25.75	32.00	Fence wire, base, P'gh Barb wire, galv., P'gh	4.10	4.10	3.00 4.10	3.25 4.35
Bessemer, Pittsburgh 29. Malleable, Chicago* 27.	5 29.35 5 27.25	29.35 27.25	36.15 33.50	time with guitt, I guitte	4.1.0	4.10	4.10	4.00
Malleable, Valley 27.	5 27.25	27.25 27.15	33.50	Old Material, Per Gross Tor	n :			
Gray forge, Pittsburgh 27. L. S. charcoal, Chicago 38.		38.85	37.50	Carwheels, Chicago	\$20.50	\$21.00	\$21.00	\$29.00
Rails, Billets, Etc.,				Carwheels, Philadelphia Heavy steel scrap, P'gh, .		22.00 14.50	23.00 15.00	29.00 28.50
Per Gross Ton:				Heavy sted scrap, Phila	15.00	15.00	15.00	29.00
Ress. rails, heavy, at mill. 45.	00 45.00	45.00	55.00	No. 1 cast, Pittsburgh		15.25	15.75	29.00 28.50
O-h rails, heavy, at mill 47. Bess billets, Pittsburgh 38.	$\begin{array}{cccc} 00 & 47.00 \\ 50 & 38.50 \end{array}$	47.00 38.50	57.00 47.50	No. 1 cast, Philadelphia	21.50	21.50	22.00	29.00
O-h. billets, Pittsburgh 38.	50 38.50	38.50	47.50	No 1 cast, Ch'go, net ton. No 1 RR. wrot, Phila	21.00	19.50 21.00	20.00	26.00
O.h. sheet bars, P'gh 42. Forging billets, base, P'gh. 51.		42 00 51.00	60.00	No. 1 RR. wrot, Ch'go, net.	15.25	15.25	15.50	29.75
O-h billets, Phila 42	50 42.50	42.50	50.50	Coke, Connellsville,				
Wire rods, Pittsburgh 52.	00 52.00	52.00	57.00	Per Net Ton at Oven:				
Finished Iron and Steel,				Furnace coke, prompt	M11 TX	\$3.50	\$3.50	\$6.00
	nts Cents 595 2.591		3.685	Furnace coke, future	4.00	4.00	4.00	6.60
Iron bars, Pittsburgh 2	35 2.35	2.35	3.50	Foundry coke, prompt Foundry coke, future		4.25	4.00	7.00
	50 2.50 35 2.35	2.50 2.35	3.50 2.90	rounny cone, muneran		4-10	4.00	1
Steel bars, New York 2	62 2.62	2.62	3 095	Metals,				
	65 2.65 92 2.92	2,65	3.25	Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Beams, etc., Pittsburgh '2	45 2.45	2.45	3.00	Lake copper, New York		16.00	15.50	23.50
	72 2.72 45 2.45	2 72 2,45	3.195 2.90	Electrolytic copper, N. Y Spelter, St. Louis		6.05	6.05	23.50 7.25
Skelp, sheared steel, P'gh. 2	65 2.65	2.65	3.25 3.50	Spelter, New York Lead, St. Louis		6.40 4.60	6.40	7.50 6.85
Steel hoops, Pittsburgh 3	05 3.05	3.05	4.50	Lead, New York	5.25	4.95	4.95	7.05
*The average switching char the Chicago district is 50c. per		ery to for	undries in	Tin, New York		72.50 6.75	72.50	\$1.03 12.50
tsilleon, 1.75 to 2.25. ‡Silicon		75.		Tin plate, 100-lb box, P'gh.		\$7.00	\$7.00	\$7.75

plies to be made by the railroads this year. For some months, jobbers and consumers of steel have been placing only small orders to cover actual needs, in the expectation that prices would decline, but this idea has nearly disappeared, and stocks are said to be very light and will have to be replenished. On nearly every item of finished steel, reports of sales managers of the steel companies made this week are more encouraging, they reporting a better inquiry and the receipt of more orders. In point of specifications, last week was the best the local steel trade has had for a long time. Some items are still dragging in demand, notably tin plate, but this will no doubt be better in the near future. whole situation is more encouraging from every angle than it has been for a long time. There is no expectation of a sharp advance in prices in the near future, but on the other hand the idea that a general slump in steel values was going to take place has been almost abandoned.

Pig Iron.-Reports of offers of basic iron to consumers in the Cleveland district and elsewhere at prices \$1 or more under the general market are not confirmed here. Furnaces say there is not enough business in pig iron being offered to make it an object to cut prices, and if any concessions are being made from regular prices it is on resale iron. Some of the steel companies, notably in the Youngstown district, have fairly heavy stocks of both basic and Bessemer iron, but so far as known none of these companies has offered surplus iron on the market at less than regular prices. It is known there is some resale iron still available, but the amount is very small. One fairly large consumer of foundry iron is in the market for 1500 tons for last half delivery, and would pay the full price, but the furnace to which the iron was offered has not yet decided to accept it. Only three or four merchant blast furnaces are in operation in the Mahoning and Shenango Valleys, and it is said the present output of high iron in these two districts and in the local district is less than the iron being melted. It is said there is absoluted lutely no chance of lower prices on ore, or labor, and

furnace operators are confronted with a probable shortage of labor before long, and all these facts tend to the belief that there will be no serious decline in pig iron prices. Small foundries are buying iron freely, and in nearly all cases want quick shipment, showing the iron is going into actual consumption. The Carnegie Steel Co. blew in one furnace the other day, and now has 27 stacks active and 32 idle. The company states it expects to increase rather than decrease its active furnaces in the near future. In the absence of any authentic sales of pig iron at less than what are regarded as regular prices, we repeat prices of last week as follows:

Basic pig iron, \$25.75; Bessemer, \$27.95; gray forge, \$25.75; No. 2 foundry, \$26.75; No. 3 foundry, \$26.25; and malleable, \$27.25; all per gross ton at Valley furnaces, the freight rate for delivery in the Cleveland and Pittsburgh districts being \$1.40 per ton.

Ferroalloys.—There is no increase in inquiry for ferroalloys, which has been very dull for some time, and sales in the past two or three months have been entirely resale material, and at prices much lower than producers named. Stocks of alloys held by consumers are still heavy, but it is said the amount of resale material available is getting small. A sale of two cars, or about 60 tons of 78 to 82 per cent resale ferromanganese is reported at about \$100 per ton, delivered at consumer's mill.

We quote 78 to 82 per cent resale ferromanganese at \$100 to \$105, delivered, with a reduction of about \$2 per unit for lower percentages. We quote resale 50 per cent ferrosilicon at \$90 to \$95 and resale 18 to 22 per cent splegeleisen at \$25, delivered. Prices on Bessemer ferrosilicon are: 9 per cent. \$43: 10 per cent, \$45: 11 per cent, \$48: 12 per cent, \$51. We quote 6 per cent silvery iron, \$36.75: 7 per cent, \$37.75; 8 per cent, \$40:5: 9 per cent, \$42.25, and 10 per cent, \$47.5; but some sellers not in Jackson County have been quoting on a basis of \$35 for 6 per cent. About \$3 per gross ton advance is charged for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace. Jackson or New Straitsville, Ohio, which have a uniform freight rate of \$2.90 per gross ton for delivery in the Pittsburgh district.

Billets and Sheet Bars.—Several steel mills report that specifications against contracts for billets and sheet bars in the past week have been a little heavier, but at present consumption of steel is probably not over 50 to 60 per cent of normal, this being about the rate of operation of the steel mills. There is some inquiry for forging billets, and we note a sale of 200 tons, carbon up to 25 per cent, at \$51 f.o.b. Pittsburgh.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$38.50, 2 x 2 in. billets at \$42; sheet bars, \$42; slabs, \$41, and forging billets \$51 base, all f.o.b. at mill, Pittsburgh or Youngstown.

Plates .- This product is still one of the quietest items on the whole list of finished steel, most of the plate mills operating on about a 50 per cent schedule, and some at a less rate. In fact, for some time plate mills have been shutting down one week waiting for orders to accumulate, and then running the next week. As yet no orders for steel cars are in sight and the two local steel car companies are doing very little, boiler shops are also not busy and there are no signs of early betterment in the demand for plate. The thought of any lower prices on plates has largely disappeared, and the mills are optimistic as to present prices holding and say the demand is sure to be better in the near future. Two or three of the smaller mills have shaded prices on plates to some extent, but the large mills say they are holding prices very firm. We quote 14-in. and heavier sheared plates at 2.65c. at mills, Pittsburgh.

Structural Material.—Local fabricators report the inquiry more active, but say the amount of new work being placed has not as yet shown any material increase. The McClintic-Marshall Co. has taken 1500 tons for a new building for the General Motors Corporation at Detroit, also 350 tons for Pier No. 23, New York, and about 100 tons for an extension to a building at Portsmouth, N. H. Fabricators state that mills are holding firm on prices for plain material.

We quote beams and channels up to 15 in, at 2.45c, at mill, Pittsburgh.

Iron and Steel Bars.—Several mills rolling steel bars report that in the past week demand has picked up some and consumers are now willing to contract for third quarter at the present price, if allowed the benefit of any decline on unshipped portions of the contract when the decline occurs. The mills refuse to guarantee prices. At present the demand for iron and steel bars is not over 50 per cent of normal capacity. There is a little more inquiry for reinforcing steel bars, but this is not yet reflected in an increase in actual order.

We quote soft steel bars rolled from billets at  $2.35\mathrm{c}$ : from old steel rails,  $2.45\mathrm{c}$ . Bar iron is quoted at  $2.35\mathrm{c}$ . for Eastern shipment and  $2.55\mathrm{c}$ . for Western shipment.

Sheets .- Conditions in the sheet trade are showing slight betterment in the direction that inquiry is a little heavier on blue annealed, black and galvanized sheets. for which the demand for some time has been very light. Several of the larger sheet mills report that mail orders last week were heavier than in any one week for a long time. Export inquiry is active and the American Sheet & Tin Plate Co. and several other mills are booking right along fairly large orders of sheets for export shipment. One order taken recently was for about 1500 tons of black sheets for Japan. Automobile builders are increasing their orders for highly finished sheets, and promise to be very heavy consumers over the remainder of this year. are that regular prices on sheets are generally held and are shaded only in a few cases, mostly by jobbers. With present high costs of making sheets, and if present rate of wages are held any serious decline in prices of sheets is not likely. Regular prices as quoted by the mills are given on page 1396.

Tin Plate.—A meeting of the Association of Tin Plate Manufacturers and also of the Sanitary Can Makers' Association was held here last week, each organization holding its own meeting, in the morning, then taking luncheon together and a joint meeting was held in the afternoon. Present conditions and outlook for the tin plate trade were very fully discussed. For some time there has been something of a deadlock between the fruit and vegetable growers and the packers in some sections of the country, notably in Mary-

land, they being unable to get together as to prices to be paid this year to the fruit and vegetable growers, Reports made at the separate and joint meetings indicated that the fruit and vegetable crop this year would probably be only about 70 per cent of what it was last year, and if the present cold, wet weather lasts much longer it may be less. Early plantings of peas, beans and other vegetables have rotted in the ground, due to the incessant rains, and replantings will have to be made. The tin plate manufacturers reported a slightly better outlook for tin plate, but the demand is far short of what it usually is at this season of the year. How. ever, it is believed that within two or three months, at the furthest, the demand will be much larger, and in the last four or five months of the year is expected to be heavy. Five months of this year have gone, and operations have not been over 50 per cent on an average, and the belief is that the output of tin plate this year will not be more than 60 per cent of what it was Some large manufacturers are operating last year. now less than 50 per cent, others a little above that Few contracts have been placed so far, as stocks held by the large users were heavy and are not yet worked off. It is said prices on production tin plate are being firmly held, but on stock items are being shaded from 25 to 50c. per base. Export inquiry is active and fair sized orders are being taken for foreign shipment and at regular domestic prices. We quote tin plate at \$7 per base box, f.o.b. Pittsburgh, for delivery to July 1, and prices of terne plate are given on page

Wire Rods.—Inquiry for rods reflects the only fair demand that exists for wire and wire nails. Export inquiries are active, but few of these result in actual orders. The demand for chain is only fair, and purchases of rods by the chain manufacturers are not very heavy. Some soft rods for shipment to Canada are being sold at regular domestic prices. Detailed prices on rods are given on page 1396.

Wire Products.—It is strongly denied that any cutting in prices is being done on bright wire nails, and it is also stated that the recent cutting of 10 and 15c. per keg on coated nails has largely disappeared. Local makers of wire and wire nails say they are adhering strongly to the schedule of prices on their products, as effective from March 21, and say there is practically no room for any lower prices on wire and wire nails, owing to high prices of steel and labor. It is also stated that jobbers are holding prices firm, and that sentiment in the wire trade is more optimistic than for some time. Jobbers and consumers are still inclined to place orders only for nearby needs, but several local mills report that specifications and orders last week were the best for some time. In certain sections there is still some slight shading, probably of only 10c. per keg on coated nails. Prices on wire products are given in detail on page 1396.

Steel Rails .- While no official information has been given out here as to prices quoted on the recent Government inquiry for 200,000 of 80 to 130-lb. steel rails. it is reported that the leading rail interest quoted \$45 on Bessemer and \$47 on open hearth, but this is not confirmed and may not be true. Prices quoted by the four independent rail mills are said to have been higher than the above prices, and it is known that one leading independent mill quoted \$55 on Bessemer and \$57 on open hearth. Up to this writing no award of the contract by the Government has been made. We note a sale of 2000 tons of standard Bessemer steel rails at \$45 made about a week ago. The inquiry for light rails is quiet, largely due to the very dull conditions in the coal trade. When that trade is active the demand for light rails is usually heavy, and it is said the coal interests use fully 85 to 90 per cent of all the light rails made. We quote 30 to 45-lb. rails at 2.45c.; 16 to 20-lb., 2.49 1/2c., and 12-lb. at 2.53 1/2c., in carloads and larger lots, f.o.b. Pittsburgh.

Hot Rolled Strip Steel.—Makers report there is more inquiry, and the amount of business being placed is a little larger. Jobbers are buying more freely to replenish their depleted stocks. It is said prices are being firmly held. We continue to quote hot rolled strip steel at \$3.30 per 100 lb. f.o.b. mill, Pittsburgh. This price is said to have been shaded recently, but makers now state it is firmer than for some time.

Cold Rolled Strip Steel.—There is more inquiry and a slight increase in orders being placed is reported by the mills. Prices are firmer and it is stated are being strongly held.

We quote cold-rolled strip steel at \$5.65 base per 100 lb., fold Pittsburgh, for 1½-in. and wider, 0.100 in and thicker hard tempered in coils 0.20 carbon and under. Boxing charge 25c per 100 lb.

Nuts and Bolts.—Makers report there is a better sentiment in the nut and bolt trade, jobbers and consumers being more inclined to buy, having fully made up their minds that any further material reduction in prices is not likely. The market on steel bars is stronger, and this is reflected in prices on nuts and bolts. It is now claimed discounts are being firmly held, and they are given in detail on page 1396.

Shafting and Screw Stock.—There is a little more inquiry, but as yet most of the business being placed is coming from the automobile trade, or from consumers who make automobile parts. Very few specifications are being received from the implement trade, as it is out of its season. Jobbers are placing orders more freely to replenish their stocks, which are reported low. Makers state discounts are holding firm.

We quote cold-rolled shafting at 28 per cent off list to carloads and 23 per cent in less than carloads, f.o.b. Pitts-

Hoops and Bands.—Two local mills report that in the past week or 10 days there has been a more active demand for hoops and bands. Both jobbers and consumers now seem to have the idea that no further reductions in prices will be made, and they are more inclined to buy. A local mill has booked in the past week several fairly large orders for both hoops and bands, and states these were taken at the full price, with no guarantee against decline. The price on hoops and bands is quoted at 3.05c., Pittsburgh, usual extras.

Spikes.—The inquiry for railroad, boat and barge spikes is still very light, expected orders from the railroads not having come out. The Southern Pacific, which recently sent out an inquiry for 4000 kegs, is said to have bought, or secured the loan of nearly this quantity from another road. This practice of borrowing or buying spikes by one road from another has prevailed for some time. Should the Railroad Administration place the orders for its recent inquiry for rails, spike makers look for contracts for the spikes a short time after. It is claimed that stocks of spikes held by the railroads, and also by the jobbers, are very light. Makers say prices are holding firm.

We quote standard spikes, 9/16 x 4½ in. and also small spikes, 33.35 base per 100 lb. in carload lots of 200 kegs or more plus usual extras. Boat and barge spikes, \$3.85 per 100 lb in carload lots of 200 kegs or more.

Iron and Steel Pipe.-Conditions in lap-weld pipe and oil country goods are very active, some mills being sold up on oil well supplies over the next two or three months, and are not in position to promise delivery on new orders before August. Constant inquiry is in the market for line pipe, ranging from three or four miles up to 50 or 60, and two inquiries have been before the trade for some time for very much larger quantities of line pipe. Mills state that unless the gas and oil companies soon come in the market and place their contracts for pipe for needed gas and oil lines to be laid this year, they will not be able to get it in time to lay these lines before the cold weather starts. The idea of consumer and jobbers that lower prices on pipe are likely to be made in the near future, seems to have largely disappeared, and the tone of the market s stronger. It is said that signs are apparent that the demand for butt-weld pipe, used largely in buildings will be better before long, as reports of new building operations from various parts of the country are more encouraging than for a long time. Discounts on iron and steel pipe are given on page 1396. For some time there has been more or less shading in prices of tubular

goods by the jobbers, but at the meeting of the pipe dealers held here last week reports were made by the jobbers that they are now maintaining prices.

Boiler Tubes.—The demand for both locomotive and merchant tubes remains very light. Locomotive and boiler shops have not much work on hand, but lately some orders for locomotives have been placed, and makers look for a more active market. Discounts are given on page 1396.

Coke.-Prices on coke are decidedly firmer, not because of any increase in the demand, but largely for the reason that for four or five months, producers have steadily cut down output to make it conform as closely as they could to the actual demand. In addition, the market was helped recently by large purchase of furnaces coke by a local interest, whose coal miners were on strike, and the concern in question had to buy heavily of spot coke to keep its blast furnaces going. Prices on 48-hr. blast furnace coke are now firm at \$3.75 to \$4, and on furnace coke for this month's delivery, consumers are paying up to \$4.50 or higher, in a few cases. Prices on 72-hr. foundry coke are also firmer, prompt being held at \$4.50 to \$4.75, and even up to \$5, while for last half of the year delivery some producers have quoted as high as \$5.50 at oven for best grades of foundry coke, but this is a little above the market. It is likely quite a few contracts of standard grades of 72-hr. foundry coke for shipment in last six months of this year will close at about \$5 per net ton at oven. Output of coke in the Upper and Lower Connellsville regions for last week is given as 100,980 tons, an increase over the previous week of 32,626 tons. above output is less than one-third the production in the two regions up to the time the armistice was signed in November last year. No talk is heard of reductions in coke workers' wages, and it is said large producers have no thought now of making any cuts in wages.

Old Material.-In sympathy with the better feeling in finished iron and steel lines, sentiment in the scrap trade is a little stronger, and some local dealers feel that the market has seen its worst. As yet, there has been no increase in buying by consumers, but there is a little more inquiry and less pressure on the part of dealers to sell. At present there is a difference in price of about \$10 a ton in favor of basic iron over heavy steel scrap, and this is unusual. Dealers sav that if prices on pig iron are going to hold, then prices on scrap used by the steel mills must come up. The Baltimore & Ohio scrap list came out the other day, Bids are to go in this week, but some and is heavy. dealers say they are not quoting on the list, as they do not know where they could dispose of the scrap, should they get it. We do not hear of any sales of moment in the past week. For delivery to Pitts-burgh consuming points and other points that take Pittsburgh freights, dealers continue to quote about as follows:

Heavy steel, melting. Steubenville, Follansbee, Brackenridge, Mones- sen. Midland and Pittsburgh, de-			
livered		\$14.50	
No. 1 cast, for steel plants	17.00 to	17.50	
Rerolling rails, Newark and Cam- bridge, Ohio; Cumberland, Md.;			
Franklin, Pa., and Pittsburgh	16.00 to	16,50	
Compressed steel	12.50 to	13.00	
Bundled sheet, sides and ends, f.o.b. consumers' mills, Pittsburgh dis-			
trict	11.00 to	11.50	
Bundled sheet stamping		10.50	
No. 1 busheling	13.50 to	14.00	
Railroad grate bars		13.50	
Low phosphorus melting stock (bloom and billet ends, heavy plates) ¼ in.			
and heavier	21.00 to	21.50	
Iron car axles	28,00 to	29.00	
Locomotive axles, steel	28.00 to	29.00	
Steel car axles	25.00 to		
Railroad malleable	14.00 to	15:00	
Machine shop turnings	9.50 to	9.75	
Cast iron wheels	19.00 to	20.00	
Rolled steel wheels		18.00	
Sheet bar crop ends (at origin)			
Heavy steel axle turnings	12.00 to		
Heavy breakable cast	18.00 to	19.00	
Cast iron borings		10.75	
No. 1 railroad wrought		19.00	

# Chicago

CHICAGO, May 20 .- (By Wire).

The trade feels more hopeful than it has been for Although no marked increase in business some time. has developed since the inauguration of an unrestricted market, inquiries for finished materials are numerous and in some instances for round tonnages. Likewise some encouraging individual orders have been received, particularly for structural material. Whereas a week ago rumors of price cutting were afloat, there is less talk of that character current this week. iron pipe has been reduced \$5 per ton, but so far as can be determined, no other iron or steel products have fallen in price. An export order for 2,000 tons of galvanized sheets has been received in this terriand was contracted for at the market quotations.

Additional foreign business is in prospect, as Japan contemplates the construction of about 200 ships calling for 2,000,000 tons of plates. There is increased activity in structural material, 5,000 tons of shapes having been awarded for two storehouses at the Hampton Roads Naval Air Station, 3,100 tons for a Kansas City structure, and 1,100 tons for the Janesville, Wis., plant of the General Motors Corporation. Other fabricating work involving several thousand tons is ex-

pected to be let soon.

Numerous reinforced concrete projects are approaching the point where steel will be bought. Twenty-five hundred tons of reinforcing steel for the new Studebaker plant at South Bend, Ind., has already been awarded to the leading independent. Morris & Co., Chicago, have awarded the general contract for a million-dollar reinforced concrete cold storage plant, to R. C. Wieboldt of the same city, but the steel required has not yet been let.

Wire products continue active and the demand for bolts and nuts is improving. The rate of mill operation has increased somewhat. Although the leading interest continues to operate at about 60 per cent of capacity, the leading independent, which was on a 50 per cent basis a week ago, is now operating at

over 55 per cent.

Pig iron continues dull, practically the only business developing being orders for carload lots. Nevertheless, shipments are fair, those of Chicago furnaces being approximately two-thirds of normal. In general, prices are holding firmly. One Southern furnace, however, has announced that it will assume a part of the freight on new business for May and June delivery.

It is felt that scrap prices have reached bottom and that the next change in quotations will be upward.

Ferroalloys.—Resale ferromanganese 80 per cent has stiffened somewhat because the supply is running low. Resale lots of spiegeleisen, 16 to 22 per cent, are available at about \$30 delivered, while producers offer spiegeleisen, 18 to 22 per cent, at \$35 furnace. There continues to be little activity in ferrosilicon.

We quote 80 per cent ferromanganese, resale, at \$110 to \$125, delivered; 50 per cent ferrosilicon, resale, at \$110, delivered; 16 to 22 per cent spiegeleisen, resale, at \$30, delivered; spiegeleisen, 18 to 22 per cent, \$35 furnace.

Pig Iron.—The activity looked for as the result of the collapse of the price stabilization plan has not yet Business is confined to carload lots and furdeveloped. naces are holding rather firmly to quotations. The only recent development offering a concession to the con-sumer is the action of one Southern producer in absorbing the freight rate and selling on a Chicago base for May and June deliveries only. Little iron is being purchased for second half requirements, the only recent transaction of any consequence being the sale of 500 tons of charcoal iron for delivery in the third quarter. The stocks of resale iron have not yet been exhausted and in some cases this material is being sold at slightly below market prices. There continues to be about the same rate of activity in foundry iron, while malleable and basic remain very dull. It is reported that some lots of resale basic have been offered at as low as \$23.25, Chicago, or about \$2.50 below furnace quotations. The leading independent is offering at the market quotations 10,000 to 15,000 tons of foundry,

which it has made recently during slack mill operations. The Missouri Iron & Steel Corporation, Inc., is planning to blow in its stack at Haigart, Mo., about July 1. This stack was moved from Jefferson, Tex.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malieable and steel-making irons, including low phosphorus, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, average silicon 1.50c, second half delivery, f.o.b. furnace, average freight to Chicago \$2.50 (other grades subject to usual differentials)	
Northern coke foundry, No. 1 silicon, 2.25 to	
2.75 Northern coke foundry, No. 2 silicon, 1.75 to	
2.25	
silicon, 2.75 to 3.25	
2.75 Southern foundry, silicon, 1.75 to 2.25. 30.75 Malleable, not over 2.25 silicon. 27.25	
Basic	
Low phosphorus (copper free)	

Plates.—There is a better feeling in the market, not so much because of business now being done, but rather on account of orders in prospect. Japan plans the reconstruction of 198 ships, calling for 2,000,000 tons of plates. Steel will be placed as soon as the financing is arranged for.

The mill quotation is 2.65c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers quote 3.67c. for plates out of stock.

Structural Material.—There is more activity in structural material than there has been for some time. One recent fabricating order is reported to have been placed at an exceptionally low figure-\$20 to \$25 per ton below other bids. It is believed the successful bidder was enabled to make the price it did because it had material on hand purchased at pre-war prices. At any rate, there have been no reports of similar cuts in connection with other fabricating contracts. can Bridge Co. will fabricate 5000 tons for two storehouses at the Hampton Roads Naval Air Station. Kansas City Structural Steel Co. has been awarded a contract for 3137 tons for the Kansas City Athletic The Worden-Allen Co., Milwaukee, will fabricate 1093 tons for the General Motors plant, Janesville, The Minneapolis Steel & Machinery Co. has received a contract for 120 tons required for alterations to a mill of the Pillsbury Flour Co., Minneapolis, Minn. The Inland Steel Co. has been awarded 2500 tons of mild steel reinforcing bars for a plant to be constructed for the Studebaker Corporation, South Bend, Ind. Bids were opened to-day on 600 tons of shapes for a new body plant of the Chevrolet Motor Co., St. Louis. It is expected that 4000 tons required for the approaches to the Michigan Boulevard Bridge, Chicago, will be let in the The Great Lakes Dredge & Dock Co. has the general contract for the bridge. Bids have been asked on 70 tons for buildings to be erected by the University of Tennessee, Knoxville, Tenn., and a like tonnage will be let for a bridge between two buildings of the fertilizer plant of Armour & Co. at Chicago Heights, Ill. Contracts are expected to be let in the Co. at Chicago near future for two viaducts, which constitute a part of the Chicago Union Station program. One to be built in Canal Street near Polk Street by the Burlington will cost about \$700,000, and the other, to be erected by the Pennsylvania in Twelfth Street, will involve approximately \$500,000. Bids on the steel have not been asked. The Edison Electric Appliance Co. is calling for bids on 473 tons for an addition to its plant at 5660 West Taylor Street, Chicago.

The mill quotation is 2.45c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 3.47c. for material out of warehouse.

Bars.—While inquiries for rail-carbon steel and iron have increased somewhat, orders actually received are in the aggregate no larger than heretofore. The demand for mild steel bars, in general, continues poor.

The leading independent, however, has received an order for 2500 tons for reinforced concrete work.

Mill prices are: Mild steel bars, 2.35c., Pittsburgh, taking a freight rate of 27c. per 100 lb.; common bar iron, 2.50 to 2.60c. Chicago; rall carbon, 2.45c., mill. Jobbers quote 3.37c. for steel bars out of warehouse.

Cast Iron Pipe.-Prices have been reduced \$5 per ton, but it is too early to determine whether this action will result in an increased demand. Springfield, Ohio, will take bids on 120 tons May 26 and Baker, Mont., will receive bids on 470 tons June 3. Brainerd, Minn., which is considering bids on from 1000 to 2000 tons, and Duluth, which has taken bids on 500 tons, have not yet awarded contracts.

We quote per net ton, f.o.b. Chicago, ex-war tax, as fol-lows: Water pipe, 4-in., \$54.80; 6-in. and larger, \$51.80; class A and gas pipe, \$1 extra.

Bolts and Nuts .- While business is by no means normal, it is steadily getting better. One noticeable effect of the failure of the stabilization plan is an increase in the size of both orders and inquiries. the round tonnage recently placed are orders for 1,000,-000 bolts apiece by a local jobber and a mail order The demand from the automobile industry is good. For mill prices see Finished Iron and Steel, f.o.b. Pittsburgh, page 1396. Jobbers quote:

Structural rivets, 4.72c.; boiler rivets, 4.82c.; machine boils up to  $\frac{8}{5}$  x 4 in., 50 per cent off; larger sizes, 40 off; carriage boils up to  $\frac{8}{5}$  x 6 in., 40 and 10 off; larger sizes  $\frac{35}{5}$  off; hot pressed nuts, square tapped, \$1.73 off; hexagon tapped, \$1.73 off; coach or lag screw, gimlet points, square heats, 50 and 10 per cent off. Quantity extras for nuts are smoothed.

One mill Sheets.—Business has taken an upturn. has received on order for 2500 tons of galvanized for There is a fair domestic demand for blue annealed from fabricators and agricultural manufacturers. Mill operation has improved.

Mill quotations are 4.35c. for No. 28 black; 3.55c. for No. 10 blue annealed, and 5.70c. for No. 28 galvanized.

Jobbers quote Chicago delivery out of stock; No. 10 blue annealed, 4.57c.; No. 28 black, 5.37c.; and No. 28 galvanized,

Old Material.—The general feeling is that prices have practically reached bottom. Almost no further reductions have taken place during the past week. Although consumers are still dormant, dealers are less pessimistic than heretofore. The Rock Island has issued a list totaling 4000 tons, including 1000 tons of rerolling rails, 500 tons of No. 1 railroad wrought and 400 tons of No. 2 railroad wrought. The Burlington is offering about 900 tons of Government material left over from the construction of freight cars. The Belt Railroad of Chicago has issued a small list.

#### Per Gross Ton

We quote delivery in buyers' yards, Chicago and vicin-Iron rails .....\$21.00 to \$22.00

Relaying rails	35.00 to	45.00	
Carwheels	20.50 to	21.50	
Steel rails, rerolling	17.50 to	18.00	
Steel rails, less than 3 ft	17.50 to	18.00	
Heavy melting steel	15.25 to	15.75	
Progs. switches and guards cut apart.	15.25 to	15.75	
Shoveling steel		15.25	
Per Net Ton			
Iron angles and splice bars	17.25 to	18.25	
Strel angle bars	14.75 to	15.25	
from arch bars and transoms	22.00 to	23.00	
Iron car axles		27.50	
Steel car axles	22.50 to	23.50	
No 1 busheling	13.00 to	13.50	
No. 2 busheling	9.00 to	9.50	
Cut forge	13.75 to	14.25	
Papes and flues	11.50 to	12.00	
No 1 railroad wrought	15.25 to	15.75	
No. 2 railroad wrought	13.75 to	14.25	
Steel knuckles and couplers	15.25 to	15.75	
Onl springs	16.50 to	17.00	
So 1 cast	19.50 to	20.50	
Holler punchings	18,00 to	19.00	
complied tires, smooth	16.50 to	17.00	
Machine shop turnings	5.00 to	5.50	
borings	8.00 to	8.50	
plate and light cast	15.50 to	16.00	
bars	15.00 to	15.50	
Brake shoes	13.75 to	14.25	
builtoad malleable	14.50 to	15.50	
malleable	14.50 to	15.00	
Country mixed	10.00 to	11.00	

Wire Products .- A feeling of optimism is growing buyers as the result of the continued demand and by jobbers are placing larger tonnages than they

did before the passing of the stabilized price plan. Barbed wire is still strong and there is also a good demand for nails, light fencing, etc. For mill prices see Finished Iron and Steel, f.o.b. Pittsburgh, page 1396.

Rail and Track Supplies .- There is some activity in track fastenings, but few orders are for more than carload lots. There is no demand for light rails.

Standard railroad spikes, 3.35c., Pittsburgh. Track bolts with square nuts, 4.35c., Pittsburgh. Steel tie plates and iron angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 2.75c., f.o.b. makers' mills, with usual extras.

# Philadelphia

PHILADELPHIA, May 20.

Several of the leading steel companies have re-ceived requests from a few customers for third quarter contracts, but some of these companies are so strongly convinced that prices will go higher upon signs of a better demand that they are not anxious for anything but spot business. In the pig iron trade a few consumers have indicated a desire to cover their requirements for second half.

There is a better inquiry for steel and pig iron and a slight improvement in business booked, but it is only by comparison with preceding dull weeks that this improvement assumes any importance. The aggregate tonnage of steel booked in the past two weeks in this market is not sufficient to materially improve mill operations, which continue at about 40 to 50 per cent., and in a few cases even less.

Some buyers of steel complain that prices are being artificially maintained, and they would like to see an actual open market, with competitive bidding for business, which might mean lower prices. steel companies, however, are adhering firmly to the schedule which was adopted at Washington and the smaller companies apparently are in no position to cut prices because of their higher costs. The only concessions reported are in the waiving of certain

Pig iron prices are tending lower and if more business develops, further reductions are not unlikely. A small tonnage of No. 2 X iron has been sold at \$29.50, delivered Philadelphia district, and about 100 tons of gray forge has been sold at \$28.55, delivered Philadelphia district. Recent sales of foundry iron include one lot of 2,000 tons of off-grade metal to a cast-iron pipe maker and another pipe maker took 1,000 tons. There was a liberal price concession on this business.

The scrap trade lacks snap and prices are weak, but dealers who have stocks in their yards are not willing to sell at present prices, and some say they will hold their material until autumn if necessary to obtain higher prices.

Ore .- Shipments of Cuban iron ore are again reaching this port, a cargo of 11,065 tons, valued at \$38,628, having been received last week. A cargo of 2,215 tons of manganese ore, valued at \$110,750, was also received from Costa Rica.

Pig Iron.-A slight improvement in buying and a little more inquiry are noted in the pig iron market, but the change is by no means important, and as a whole the market is exceedingly dull. Among recent sales were 2000 tons of off-grade foundry iron to a cast iron pipe maker and another lot of 1000 tons to another pipe maker. Fairly liberal price concessions are reported to have been made on this business. A small tonnage of No. 2 X iron from a Pennsylvania furnace has been sold at \$29.50, delivered Philadelphia, and it is reported, but not confirmed, that the same buyer obtained a part of his requirements about \$1 below this price. A carload of No. 1 X iron (2.75 to 3.25 per cent. silicon), was sold at \$31.10, delivered Philadelphia district. A small lot of gray forge iron was sold at \$28.55, delivered, this being equivalent to \$25.75 at furnace, plus a \$2.80 freight rate to this district. It is noted also that some of the eastern Pennsylvania furnaces are asking only \$1 a ton differential on No. 2 X iron over No. 2 plain, whereas the differential established during the war was \$1.25.

There is no inquiry for nor sales of basic iron, hence the price remains nominally unchanged at \$30.65, delivered Philadelphia. Any important sale that is made undoubtedly will be on a lower basis. The War Department is offering low phosphorus pig iron for sale, but is having difficulty in finding buyers. It is not surprising, therefore, that the makers both of standard and copper-bearing are doing practically nothing. Purchases could be made at prices lower than those quoted below, but in the absence of sales of importance, we maintain those quotations as nominal. We quote for delivery in the Philadelphia district as follows, except that low phosphorus grades are quoted f. o. b. furnace:

Ferroalloys.—A producer of ferromanganese be lieves there is a better feeling among consumers, and he also notes that resale lots are being offered less frequently. Producers still maintain a quotation of \$150, delivered, for 78 to 82 per cent. ferromanganese, but carload lots of resale material have recently been sold at \$105. Spiegeleisen, 18 to 22 per cent, is offered by the furnaces at about \$35, f. o. b. furnace.

Billets.—There is practically no demand, but prices are fairly well maintained, the only exception noted being that one maker is reported to have sold forging quality billets at the price of re-rolling billets. We quote open-hearth rerolling billets delivered in the Philadelphia district at \$42.50.

Old Material.—The mills are staying out of the market and little business is being done, even among dealers. Yard dealers who have scrap in storage decline to sell in most instances at present prices, declaring they will hold their material until fall if necessary to realize the profits that they expect eventually to accrue. The Pennsylvania Railroad disposed of about 25,000 tons of material on its May list. Included in this was 4000 tons of carwheels, a part of which went to an eastern Pennsylvania steel plant at \$20, delivered. Some dealers believe that No. 1 heavy melting steel is a little stronger, but there have been no important sales. The War Department is offering about 30,000 tons of shell ingots and forgings at Detroit and Port Huron, Mich., bids to be in by May 29. We quote for delivery at consumers' works in eastern Pennsylvania as follows:

The state of the s			
No. 1 heavy melting steel	\$15.00 to	\$15.50	
Steel rails, rerolling	17, 30 to	18.00	
No. 1 low phosphorus, heavy, 0.04 and			
under	22,50 to		
Iron rails	20.00 to	22.00	
Carwheels	20,00 to	21.00	
No. 1 railroad wrought	21.00 to	22,00	
No. 1 yard wrought		20.00	
Country yard wrought		15 00	
No. 1 forge fire		13.00	
Bundled skeleton		13.00	
No. 1 busheling		16.00	
No. 2 busheling		14.00	
Turnings (short shoveling grade for			
blast furnace use)	10.50 to	11.50	
Mixed borings and turnings (for blast			
furnace use)	9.50 to	10.00	
Machine-shop turnings (for rolling	2100 10	20.00	
mill use)	10.50 to	11.00	
Cast borings (clean)			
No. 1 cast	21.50 to	22.50	
Grate bars			
Stove plate	17.00 to	18.00	
Railroad malleable	18 00 to	19.00	
Wrought iron and soft steel pipes and	18.00 10	13.00	
tubes (new specifications)	10 00 10	10 70	
Ungraded pipe	12.00 to	18.50	
Sufference Dibo statement assessment	10.00 10	14.00	

Plates.—The action of the Lukens Steel Co. in advancing its price on plates \$2 a ton has stimulated a small amount of business not only for that company but for other plate makers. Business is mostly in 50 to 200-ton lots. No other plate manufacturer has raised prices in this market, but some predict they will do so as soon as business warrants it. We quote

sheared plates ¼ in. and heavier at 2.895c, Philadelphia.

Structural Material.—A little better inquiry for small tonnages of plain material from fabricators is noted. Several large building projects which are under consideration have not yet reached the point of actually going ahead. We quote plain material at 2.695c, Philadelphia.

Bars.—Steel bar makers report a moderate increase in demand, particularly from jobbers, but the aggregate of new business is not large. There is very little demand for bar iron. We quote soft steel bars and bar iron at 2.595c., Philadelphia, double refined bar iron being quoted 1c. per lb. higher.

Sheets.—The improvement in demand for sheets, if any, is not important. We quote No. 10 blue annealed at 3.795c.; No. 28 black, 4.595c.; No. 28 galvanized, 5.945c., all Philadelphia.

# St. Louis

ST. Louis, May 19.

Pig Iron.—The atmosphere is clearer as a result of the abandonment of the effort to fix prices, although there has not been any buying of moment as yet. There is a more definite disposition to look into the matter of buying for last half and some inquiries have come out, one of 750 to 1500 tons of malleable for last half and one of 250 to 500 tons of charcoal for the same delivery being the most notable at present. There is as yet no disposition to make any reductions in price, save that some Southern furnaces have shown a willingness to equalize prices as affected by the freight rates to bring their product in line with the price delivered of Northern iron. This, however, has so far applied only to iron in the yards and not to deferred delivery material. The consuming trade seems to be pretty well down to the bottom of its stocks and to be ready to buy at least for immediate needs and this is resulting in frequent purchases of small lots, while there is also developing a disposition to go into the market and make contracts for their product and then buy in lots suited to protect such contracts. Ultimate consumer needs are also beginning to press the melters somewhat and this is likely to add to the tendency to buy pig iron shortly. Altogether the feeling is that the future is looking much more favorable.

Coke.—There is no present buying in coke as the interests dealing in domestic coke are carrying over a considerable quantity in this territory due to the warm winter, while the users of metallurgical coke are corered by contracts which run to the end of June and therefore are not expected to enter the market until more nearly at the end of the contract period. Some small buying goes on from week to week, but the aggregate is negligible from a market standpoint.

Finished Iron and Steel.—The mills are not being pressed with contracts for finished material, but there is generally a better feeling, partly due to the final decision to quit efforts at price fixing and partly to the fact that there is a growing demand from the ultimate consumer which is forcing the contractor and the supply house to buy more and more. The general properity of the Central West and Southwest is being reflected in a steadily improving business whose demands will not be denied. In fact, definite needs are appearing and contractors report a very considerable amount of work in the offing which ought to be under way in a comparatively short time. Movement out of warehouse is improving steadily, though not in any exciting degree. For stock out of warehouse we quote as follows:

Soft steel bars, 3.44c.; fron bars, 3.44c.; structural material, 3.54c.; tank plates, 3.74c.; No. 8 blue annealed sheets, 4.59c.; No. 10 blue annealed sheets, 4.64c.; No. 28 bars sheets, cold rolled, one pass, 5.44c.; No. 28 galvanized sheet black sheet gage, 6.79c.

Old Material.—The dealers are feeling a little better as a result of the fact that there is to be some sort of a market, even if it is to be an open market and therefore are beginning to take a more general interest in the situation. At the same time none of them are willing to do any plunging either long or short of the mar-

ket. They are not disposed to make any material changes in prices, but are inclined to play a waiting game. The big consumers are not in the market at present and these too are seemingly willing to wait a little longer before throwing their buying weight into the present scale. However, the general feeling is one of improved spirits.

Per Gross Ton	
and iron rails\$20.00 to \$20.50	
steel rails, rerolling 15.50 to 16.00	
steel rails, less than 3 ft 15.00 to 15.50	
Delaying rails, standard sections, sub-	
ject to inspection 40.00 to 45.00	
Old carwheels 18.50 to 19.00	
No. 1 railroad heavy melting steel 14.00 to 14.50	
Heavy shoveling steel 13.00 to 13.50	
Ordinary shoveling steel 12.50 to 13.00	
Frogs, switches and guards, cut	
apart	
Ordinary bundled sheets 8.00 to 8.50	
Heavy axle and tire turnings 8.50 to 9.00	
Per Net Ton	
From angle bars	
Steel car axles	
Wrought arch bars and transoms 13.00 to 14.50	
No. 1 railroad wrought	
Railroad springs	
Steel couplers and knuckles 13.00 to 13.50	
Locomotive tires, 42 in, and over,	
smooth inside	
No. 1 dealers' forge 10.50 to 11.00	
Cast iron borings 6.50 to 7.00	
No. 1 busheling	
No. 1 boiler cut to sheets and rings. 9.50 to 10.00	
No. 1 railroad cast 19.00 to 19.50	
Stove plate and light cast 13.75 to 14.25	
Railroad malleable 12.00 to 12.50	
Pipes and flues	
Heavy railroad sheet and tank 9.50 to 10.00	
Railroad grate bars	
Machine shop turnings 6 00 to 6.50	
Country mixed 10.50 to 11.00	
Uncut railroad mixed 11.50 to 12.00	
Horseshoes 14,50 to 15.00	

## Cincinnati

CINCINNATI, May 20—(By Wire).

Pig Iron,-The Louisville & Nashville Railroad bought 500 tons of Southern iron for May-June delivery and a small lot of foundry iron is wanted by the Balti-more & Ohio Railroad. The scattered inquiry from foundries shows some improvement and a few buyers are inclined to consider covering for their last half requirements. The invariable reply to requests for quotations brings the price of \$26.75 furnace, but the consumer is generally given to understand that an acceptable offer might be considered. Some offers for nearby shipment of iron averaging 1.75 to 2.25 per cent silicon have been accepted below the schedule price, while a few carloads have brought the maximum The average reduction made that would apply to both Northern and Southern iron is estimated around \$1 per ton, although a few quiet transactions may have been made on attractive business where the reduction named probably has been exceeded. Resale iron figures strongly in present transactions, but within the past few days some consumers who are overloaded are more inclined to take the iron due them on contracts. Because of the continued slackening in the operation of furnaces reported from southern Ohio and the Birmingham district, operators of furnaces now idle show no inclination to blow in again until they can get a clearer view as to what the future has in store for them. It is freely stated that at present costs there is no incentive for them to resume operations.

Based on freight rates of \$3.60 from Birmingham and \$1.50 from Ironton, we quote, f.o.b. Cincinnati:
Southern coke, silicon, 1.75 to 2.25 (base price).\$29.35
Southern coke, silicon, 2.25 to 2.75 (No. 2 soft). 30.60
Southern gray forge 29.35
Ohio silvery, 8 per cent silicon. 42.05
Southern Ohio coke, silicon, 1.75 to 2.25 (No. 2) 27.55
Basic, Northern 27.55 

Coke.—The market is stagnant. Only an occasional car of foundry coke changes hands from day to day. There is no interest taken in future wants for either furnace or foundry coke. There has been some talk of

prices being a trifle firmer due to the cutting down in production in some of the fields, particularly in the Connellsville district. However, this is offset by the reduction in consumption of both furnace and foundry grades. Connellsville 48-hr. coke is unchanged around \$3.75 to \$4 per net ton at oven, and 72-hr. fuel at \$5 to \$5.50. Pocahontas and Wise County producers appear to be making about the same quotations and are willing to take on prompt furnace coke orders around \$5, with \$5.50 representing what the contract figure would be, if there was any business in sight. Foundry coke is stationary at \$6 to \$6.50. Although New River operators are quoting from \$7.50 to \$8 at ovens, this is only on some special brands.

Fluorspar .- Conditions have not changed since last week's report, and business is reported as being very quiet. No future contracting is under way. Washed fluorspar for nearby shipment remains at \$25 per ton at point of shipment.

Finished Material.—The waiting attitude of buyers is unchanged. Trading is confined almost entirely to nearby delivery. Although new buying is very light, mill agencies report that specifications on old contracts are coming in at a very encouraging rate. Steel pipe is in good demand from some parts of Kentucky where oil wells are being driven. A slight improvement is noted in galvanized sheets, but black sheets are not in demand. The mill price on No. 28 black sheets is 435c., Pittsburgh, and on No. 28 galvanized, 5.70c., with a freight rate to Cincinnati of 23c. per 100 lb. Hardware dealers are placing orders for wire nails a little more freely.

The following are present local jobbers' prices: Steel and iron bars, 3.33c, base; bands, 4.63c, base; structural shapes, 3.43c, base; plates, \$\mathbf{t}\_1\$-in, and heavier, 3.63c, base; No. 10 blue annealed sheets, 4.53c, and wire nails, \$3.85 per keg base.

Old Material.—Dealers state that business is simply marking time. They report no changes in recent quotations because of the slack demand for scrap of any kind and the subsequent absence of any buying of consequence. The shutting down of several foundries in this vicinity, due to labor troubles, has cut down the melt of foundry scrap. The steel mills are also slow in placing any contracts for future shipment, other than those they have already signed. The following are dealers' buy ing prices in carload lots, f.o.b. yards Southern Ohio and Cincinnati:

1111111111111111111	
Per Gross Ton	
Bundled sheet	\$9.50 to \$10.00
Old iron rails	22,50 to 23,00
Relaying rails, 50 lb. and up	40.00 to 41.00
Rerolling steel rails	
Heavy melting steel	
Steel rails for melting	13.00 to 13.50
Old carwheels	15.50 to + 16.00
No. 1 railroad wrought	
Per Net Ton	
Cast borings	\$5.50 to \$6.00
Steel turnings	
Railroad cast	
No. 1 machinery	
Burnt scrap	
Iron axles	
Locomotive tires (smooth inside)	
Pipes and flues	
Malleable cast	
Railroad tank and sheet	8.50 to 9.00
there were successful to the s	0.00 10 3.00

# Buffalo

BUFFALO, May 20.

Pig Iron.—The volume of business placed continues to show improvement, and a tinge of optimism is spreading among furnacemen that the slump in buying so general in the past two or three months may be overcome and that a state more nearly approaching normal will gradually be resumed. Buyers who have been holding off are evidently more willing to come into the market and there has been a definite increase in the tonnage inquired for during the week. One producing interest reports several inquiries for amounts above the average for the past few weeks, one of them being for 3000 tons of foundry grades for forward delivery and the same interest also sold a little tonnage for last half delivery. In fact, the belief appears to be strength-

ening that the movement for the buying of raw material has really begun, as reports indicate that many foundries are practically out of iron and are likely to come into the market in a very short time. The Wickwire Steel Co., which intended to blow out one stack last week, has postponed the matter of relining for a week when it will have sufficient stock to tide over until the stack now out shall again be placed in operation. Some iron has been piled by the furnaces of the district recently, but the tonnage accumulated has not been large. Furnacemen estimate that the cost of production has greatly increased in the past year and that there is no greater margin of profit over the cost of production now than at the time of the lowest prices just before the war; in other words, that the rise in price consequent upon war inflation does not compensate for the shrinkage in the purchasing power of the dollar. From estimates made by furnacemen it would appear that wages have increased 150 per cent, ore 90 per cent, limestone 80 per cent, coke 100 per cent, freight rates 30 per cent, including the dock charge of 5c. per ton for ore, and overhead expense 100 per cent. The price schedule shows no quotable change from the price established March 21. We quote as follows, f.o.b. furnace,

No. 1 foundry, 2.75 to 3.25 silicon\$29.7	5
No. 2 X, 2.25 to 2.75 silicon	10
No. 2 plain foundry, 1.75 to 2.25 silicon 26.7	5
Gray forge 25.7	5
Malleable, silicon not over 2.25 27.2	25
Basic 25.7	5
Basic, 1 to 11/2 per cent manganese 26.2	15
Basic, 11/2 to 21/2 per cent manganese 26.7	5
Bessemer 27.9	15
Lake Superior charcoal, regular grades, f.o.b.	
Buffalo 32.3	15

Finished Iron and Steel .- The demand for steel products is slightly better, a number of buyers having apparently changed their views as to the prospect of lower prices being obtainable, and taking into consideration developments since the conference with the Railroad Administration, seem to have decided that the present prices represent about the bottom of the market. The actual tonnages being placed are, however, compara-tively small for miscellaneous material. The demand for sheets, for automobile purposes, for wire and wire nails. keeps up well and producers are shipping all that they can make. The Ferguson Steel & Iron Co., Buffalo, will fabricate canal barges, requiring approximately 2000 tons of material, to be supplied by the Railroad Administration upon awards that are understood to have been made at Washington to the Carnegie Steel Co. Structural steel is reported as being somewhat more active in Canada, a number of fabricating contracts having been awarded of tonnages running from 100 to 500 tons. The Kellogg Structural Steel Co., Buffalo, has received awards of 200 tons of fabricated steel for public school No. 8, Buffalo; 100 tons for a public school at Rome, N. Y., and 200 tons for two ice storage buildings at Utica.

Prices, f.o.b. Buffalo, are as follows: Steel bars, 3.40½c.; iron bars, 4.10½c.; shapes, 3.50½c.; plates, 3.70½c.; No. 10 blue annealed sheets, 4.60½c.; No. 28 black, 5.65½c.; No. 28 galvanized sheets, 7.00½c. For "store door delivery" add 0.04½c. to each commodity.

Old Material.—Consumers are showing a little more interest as to scrap requirements and dealers say the outlook is brightening all along the line. Better inquiry is noted for heavy melting steel, in particular, both from local users and mills outside the district. The demand for cast scrap and stove plate within the local district is also keeping up. Machine shop turnings show a slight recession in price due to a let up in demand from the Pittsburgh and Youngstown districts, there having been a drop of \$7 to \$7.50 from the preceding week's price of \$8.50 to \$9.50. Bids for the 2000 tons of steel shell forgings stored at the plant of Bids for the the J. J. Carrick Co., Inc., Buffalo, are to be closed at noon to-morrow at 82 St. Paul Street, Rochester. It is understood that about \$16 per gross ton, "on the ground," was realized from last Saturday's sale of the 20,000 tons at that time remaining unsold of the 33,000 tons of ingots, billets and forgings owned by the Government and stored at various producing plants in Buffalo. Scrap dealers are confident that a buying tendency is developing and that consumers will soon be purchasing on a larger scale. We quote dealers' asking prices as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel, regular grades\$14.00 to \$15	
Low phosphorus, 0.04 and under 21.00 to	
Carmboola	0.0
Pailroad mallaghla	
	0.00
Machine shop turnings 7.00 to	.50
Heavy axle turnings 13.00 to	
Clean cast borings 11.00 to 12	
Iron rails 21.00 to 21	00.5
Locomotive grate bars 16.00 to 17	
Stove plate 18.50 to 19	00.
	0.0

# Birmingham

BIRMINGHAM, ALA., May 19.

Pig Iron.-It is agreed by Alabama iron makers that the market shows distinct improvement, not especially in volume of business, but in tone and in character of inquiry. It is generally admitted that business in strictly competitive territory, when there is enough to go out for earnestly, will be met by more or less absorption of the differentials in freight necessary to meet the competition. Hence there is probability of a wide variance of price according to point of delivery. A lot of several hundred tons is understood to have been sold to a Louisville concern at something like \$25 f.o.b. Birmingham in order to meet Ohio furnace competition and a sale of 2.25 to 2.75 per cent silicon, for which one Alabama maker asked the schedule price of \$28, is said to have been made on a basis of a little over \$26. The strict market price is adhered to in strictly Southern territory and only one maker is credited with having jumped over the line in competitive territory by freight absorption, but more is looked for. Current sales of small lots for prompt delivery have been more numerous, one interest having booked around 4000 tons the first half of the month. No sale of greater than 300 tons has been heard of during the week. A feature No sale of greater than 300 of the market has been the appearance of many small consumers who but recently claimed to have iron on yards sufficient for two to three months' requirements. Another feature is the demand for iron of high analysis. Pipe founders, especially makers of sanitary pipe, are entering the market with increased demand for prompt Inquiry is altogether much brisker. Ship delivery. room is being offered freely at southern ports for export iron, but the ocean rate is entirely too high for business. When it reaches \$15, which is \$13 under present average, the foreign movement will take on volume, but makers are not sufficiently hopeful of business under present rates to be even interested. The steel melt in the Alabama district remains around 70 per cent, with indications of improvement. The Shelby charcoal stack did not go out on account of accumulated iron stocks, but on account of low stocks of charcoal. The Woodward Iron Co. still operates only one stack, but has another ready in case of market improvement. Wage adjustments continue to be effected here and there without friction. We quote per gross ton f.o.b. Birmingham district furnaces as follows:

Cast-Iron Pipe.—Both water and sanitary pipe markets continue to improve. The Superior foundry at Bessemer will resume during the week. Many southern municipalities are inquiring for water pipe. The situation becomes stronger each week.

Coal and Coke.—Coke reflects the same increased activity in the foundry trade as pig iron. The market is firmer and volume of prompt business is growing. Price is firm at \$8. An inquiry for blacksmithing coal was received from Drifton, Pa.

Old Material.—The scrap market is becoming firmer in so far that a stiffer attitude on the part of the

dealers is manifested and they are more and more reluctant to part with holdings at present prices, especially those of heavy melted steel. Cast is moving in considerable quantity and bids fair to advance. We quote per gross ton f.o.b. Birmingham district yards, prices to consumers as follows:

Steel rails	\$12.00 to \$12.50
va t heavy steel	. 11.50 to 12.00
iron borings	. 6.00 to 6.50
Muchine shop turnings	, 6.00 to 6.50
Stove plate	. 13.00 to 13.50
No 1 cast	. 19.00 to 19.50
Carwheels	. 19,00 to 1950
Tramcar wheels	. 18.00 to 18.50
Steel axles	. 17.00 to 18.00
No 1 wrought	. 12.00 to 13.00

## Cleveland

CLEVELAND, May 20.

Iron Ore .- There is still very little activity in the ore market, but some consumers are looking into their mixtures and conferring with sellers in order to definitely line up their requirements, and are expected to place their orders shortly. While shipments are improving slightly, those of the merchant ore firms are still very light, the bulk of the tonnage that has been moved so far being for the Steel Corporation. Easterr furnaces have large stocks of ore, they are expected to want some Lake Superior ore this season, althought it is not probable that they will buy any in the There is a scarcity of ocean boats for near future. coarse freight, and this is expected to have some effect on ore importations. Last season foreign ore brought to this country, including imports from Canada, amounted to 785,000 tons. The total imports of 1917 amounted to 785,000 tons. were 971,000 tons, and in 1916 1,325,000 tons. Sales of Lake Superior ore for Eastern shipments during 1918 amounted to 5,927,000 tons. Ore prices, delivered f.o.b. lower Lake ports, are as follows:

Old range Bessemer, \$6.45; old range non-Bessemer, \$5.70; Mesaba Bessemer, \$6.20; Mesaba non-Bessemer, \$5.55.

Pig Iron.-The pig iron market has improved considerably during the past week, and its general tone has become better. The increased demand is almost wholly for foundry iron, for which a fair volume of inquiry has come out for both early shipment and during the last half. Up to the present time there has been scarcely any inquiry for last-half contracts, but several consumers are in the market for iron for that delivery, one inquiry being for 1000 tons and another for 500 tons. Most of the early shipment orders are for small lots, ranging from a carload up to a few hundred tons. One interest reports sales during the week aggregating 1800 tons in several small lots for early delivery. land interest has taken an order for 4000 tons of forge iron in the Pittsburgh district at the regular price of Prices on foundry iron are firm in this territory, there apparently being no cutting in prices except on resale iron and possibly in some cases where a seller is willing to absorb some of the freight rate. No activity is reported in steel-making iron. One or two consumers are still feeling the market on prices on basic iron, and claim to have secured quotations down to around \$24.50, but no sales are reported. Some sellers report an improvement in shipping orders on founby iron, but no better demand for steel-making iron. We quote, delivered Cleveland, as follows:

essemer																							. 3	29.3
time		 								5 0.								0 8	. 8	*	*	F. 1		27.1
orthern	No	2	fo	11	n	lr	y.									à								27.1
outhern	No	2	fo	123	ne	lr	٧.	*	si	lic	0	n	2	. 2	35		to	>	2	.7	5			33.0
my fors	100																							26.1
hlo silve	7-3-	ii:	ce	177		8	E	01	-	re	n	+												426

Coke.—The coke market is almost lifeless. Foundries are apparently getting all the coke they need on contracts, and there are practically no sales of prompt shipment coke. Sellers are not looking for last half contracts, and consumers so far have shown no interest in placing contracts. We quote standard Connellsville foundry coke at \$5 to \$5.25 per net ton at oven for lest makes.

Bolts. Nuts and Rivets.—Bolt manufacturers report a little improvement in orders. However, the demand

is mostly for small lots. While prices apparently are being fairly well maintained, there are reports of shading ranging from 2½ to 5 per cent. Rivet specifications are also coming out in slightly better volume from the shipyards and boiler shops. New demand is very light. Very little price cutting is reported.

Finished Iron and Steel .- The steel market has improved materially in its tone and in the volume of orders. Quite a few consumers came into the market during the week for contracts for steel bars, plates and structural material, some wanting to cover for the remainder of the year. A few of the mills are booking contracts, mostly for bars either for the third quarter or for three months beginning with June, but others are declining to make contracts. Agricultural implement makers are placing contracts for steel specialties The market is firm, and there for the third quarter. are no reports of shading of regular quotations. demand for structural material is becoming more active and the demand for reinforcing bars is heavy Central Steel Co., Massillon, Ohio, has received bids for 2000 tons for a mill building; the Detroit Seamless Tubes Co., Detroit, is inquiring for 1000 tons for its new plant; the Massillon Bridge & Structural Co. has taken 500 tons for a plant addition for the Goodyear Tire & Rubber Co., and T. H. Brooks & Co. 100 tons for the plant of the Jones Gear Co., Cleveland. Bids will be received shortly for 3000 to 4000 tons for the County Jail in Cleveland. The B. F. Goodrich Rubber Co. will require 2500 tons of reinforcing bars for a 9-story warehouse. The Minnich-Gibbons Co. was low bidder for the sewage disposal plant in Cleveland requiring 800 tons of reinforcing bars, and 1700 tons of bars for an Akron viaduct have not yet been placed. An inquiry is out for 840 tons of standard rails for the new Standard Oil Co. refinery in Toledo, which will require a large tonnage of steel. Government work along the Ohio River will shortly require 2000 tons of sheet steel piling. The demand for alloy steel from the automobile manufacturers has improved. Ohio mills making alloy steel are operating at about 50 per cent of capacity. The semi-finished steel market, which has been lifeless, now shows some activity, although consumers are buying only for early shipment. There is a fair demand for boiler plates and tubes. Boiler shops are not disposed to pay the present price of an Eastern mill which on a mill instead of Pittsburgh basis is \$4.50 a ton delivered above the regular price.

Steel bars, 3.27c.; plates, 3.57c.; structural shapes, 3.37c.; bands and hoops, 3.97c.; No. 10 blue annealed sheets, 4.47c.; No. 28 black sheets, 5.27c.; No. 28 galvanized sheets, 6.62c.

Old Material.—There is a better feeling in the scrap market and several grades are being held at slightly higher prices. However, the market continues dull. Mills are not buying material, and show no disposition to do so until the demand for steel picks up. Some dealers are still laying down considerable heavy melting steel for which they are paying around \$14.80 to \$15, but dealers are asking consumers \$15.25 and higher for this grade. Sales of turnings are reported at \$8, and borings at \$10 per gross ton. These are the only grades that are anyway active outside of heavy melting steel. We quote, delivered consumers' yards in Cleveland and vicinity, as follows:

Heavy melting steel\$1	4.75 to	\$15.25
	5.75 to	
	6.00 to	
	3.00 to	
	9.50 to	
	7.50 to	28,50
Low phosphorus melting scrap 1	6.25 to	17.00
Cast borings	9.75 to	10.25
	8.00 to	8.50
	3.00 to	13.50
	7.00 to	17.50
	2.00 to	22.50
Agricultural malleable 1	4.00 to	15.00
	7.00 to	18,00
Steel axle turnings 1	3.00 to	13.50
	1.00 to	11.50
DIRIL DISTRICT CONTRACTOR	1.00 to	200
1101 7 CONTESTITUTE OF THE PROPERTY OF THE PROP	3.75 to	
	3.00 to	
Drop forge flashings, over 10 in	9.50 to	10.00
Railroad grate bars 1	6.50 to	17.00
	7.00 to	18.00

# New York

NEW YORK, May 20.

Pig Iron.-The sale of 3000 tons of basic by a Buffalo furnace at the regular price, \$25.75, furnace, is reported, but on foundry iron there has been some shading and No. 2X, 2.25 to 2.75 per cent silicon has been sold at \$27, Buffalo, or \$1 below regular quotation, to a New England point carrying a freight rate of \$3.90, making the delivered price \$30.90, which is \$75c. lower than the quotation made by an eastern A canal freight rate from Pennsylvania furnace. Buffalo to New York of \$2.25 is now obtainable, compared with \$3.10 last year, while from Buffalo to Bridgeport, Conn., and other Sound points a rate of \$2.75 is obtainable, as compared with \$3.10 last year. These new rates show that Buffalo will be an increasingly important center in competition with furnaces in the South and eastern and central Pennsylvania. For the present, Alabama makers are out of the market in the East, as they are unable to compete with Buffalo and Pennsylvania furnaces. They have, however, shown a disposition to absorb a part of the freight rate and Southern pig iron is not strong. Domestic business generally is at least as active as it was a week ago and some agencies report a larger number of inquiries, extending in a few cases into the last quarter. The foreign outlook is improving, as is indicated by the sale of 1000 tons of foundry grades by one company for export and improved prospects of being able to sell for delivery to a number of foreign countries. We quote as follows, delivered New York, for Northern and Southern grades, although quotations on the latter are nominal:

No.	1	foundry, silicon, 2.75 to 3.25\$31.55
No.	2	X, silicon, 2.25 to 2.75
		plain, silicon, 1.75 to 2.25 28.55
No.	2	X, Virginia, silicon, 2.25 to 2.75. \$31.90 to 32.40
		Southern, silicon, 2.75 to 3.25 37.45
No.	2	Southern, soft (all rail), sil. 2.25 to 2.75. 35.70
No.	2	Southern (all rail), sil., 1.75 to 2.25 34.45

Ferroalloys .- The market for ferromanganese and spiegeleisen is dead. In the past week there have been almost no inquiries for ferromanganese and only a few for spiegeleisen. Leading producers continue to quote ferromanganese at \$150, delivered, and spiegeleisen is obtainable at \$33 to \$35, furnace, depending upon the analysis. It is believed that most of the resale spiegeleisen has been absorbed and that very little resale ferromanganese is obtainable. Ferrosilicon, 50 per cent, is also very quiet and is quoted nominally at \$80 to \$90 per ton, delivered, for either resale or regular producers' material. Electric ferrosilicon, 15 per cent, is obtainable at \$45 to \$55 per ton, delivered. An interesting fact showing the difference between the American and French markets in ferroalloys is that French 10 to 12 per cent electric ferrosilicon is offered for American consumption at \$77 per ton, French ports, which means a cost of over \$100 per ton for American consumers at American ports, or over double that of the material from American and Canadian producers. An American agent has recently sold a small quantity of 15 per cent electric ferrosilicon for delivery in England at a price under the French quotation referred to.

Finished Iron and Steel.-The American Locomotive Co., which recently received a contract for 150 locomotives for Italy, has purchased 3000 tons of plates for its Schenectady works, most of this business being accepted by the mills at 2.50c., Pittsburgh. One company took 1000 tons and 2000 tons was divided among four other mills. One company's quotation will net it 2.62c. at mill. Of the 3000 tons 1200 tons is boiler plate, 300 tons firebox plate and the remainder consists of light plates less than % in. On 1500 tons of tank plates for China a mill has quoted 2.45c., Pittsburgh. These are the only evidences of price cutting except that on 10,000 tons of standard rails for the Far East a price was made which was somewhat less than the \$55-\$57 scale, which rail mills have recently quoted on export business. Business in plates is better than it has been for many weeks, there being a fair number of orders for 100 and 200-ton lots from fabricators and a Staten Island ship-

building company has placed 1800 tons at 2.65c., Pitts-There is an inquiry in the market for 15,000 burgh. tons of plates for Japan. The most notable development of the past week has been the increase in building construction. George W. Loft, the candy manufacturer, is expected to let the contract shortly for a new plant at Long Island City, which will take 2500 tons of steel. The Eastern Steel Co., Pottsville, Pa., has taken two schoolhouses in New York, totalling 1300 tons. The Hay Foundry & Iron Works, Newark, has taken 1400 tons for a candy factory; 1000 tons for a Public Service power station in New Jersey, and 350 tons for a tele-phone exchange at Elizabeth, N. J. The Hinkle Iron Co., New York, has taken 800 tons for an ice-manufacturing plant in New York; 400 tons for a telephone exchange at Cypress Hills, Brooklyn. The George A. Just Co., Long Island City, has taken 200 tons for a theater building at 3819 Broadway, New York. The American Bridge Co. will fabricate 1600 tons for the Phoenix Life Insurance Co. building at Hartford, Conn. The Bethlehem Fabricators, Inc., Bethlehem, Pa., will furnish 250 tons for an apartment building in Baltimore The Park & Tilford Co., New York, expects to put up a candy factory, which will require 1500 tons, now up for bids. The Standard Oil Co. of New Jersey is going ahead with tanks in the South and Southwest requiring Westinghouse, Church, Kerr & Co. have 2000 tons. taken bids on 1400 tons for a plant for the Chicago Pneumatic Tool Co. at Franklin, Pa. A proposed sheet mill for Baltimore, on which the Great Eastern Rolling Mill Co. has been getting bids may not be built on account of present high building costs. The Boston & Maine Railroad has reached no decision on 350 tons for a bridge. Architects are getting estimates on many buildings regarding which little definite information is as yet available. As a whole, structural business has taken quite a spurt, and the volume of business placed in the past week, though small in comparison with what is expected at this time of year, is an improvement over conditions that have existed since the end of the war. We quote mill shipments as follows: Bar iron, refined grade, 2.62c.; double refined bar iron, 3.62c.; soft steel bars, 2.62c.; shapes, 2.72c.; plates, 2.92c., all New

Warehouse Business .- A noticeable but not sustained increase in orders the past week is taken generally as precursory to the long-awaited buying movement; although some jobbers rather deprecate the assumption that the coming summer will witness a complete resumption of industrial activity. There is a feeling of satisfaction in some quarters that attempts at price-fixing are over, and that the market can now stand on its own bottom. Buyers are coming forward more numerously with inquiry covering second half needs; and in some instances are contracting for sheets, etc., over that period. Interest locally is centered on the convention of the American Iron, Steel and Heavy Hardware Association at St. Louis, where the effort is to be made to eliminate the practice of allowing freight from warehouse shipping point to the customer's receiving point. We quote out-of-store as follows: No. 10 blue annealed sheets, 4.57c.; No. 28 black sheets, 5.37c.; No. 28 galvanized sheets, 6.50c.; steel bars, 3.37c.; structural shapes, 3.47c.; plates, 3.67c.; bands, 2.16 in No. 10 and 12 4.75c.; plates, 3.67c.; bands, 3/16 in., Nos. 10 and 12, 4.07c.; shafting, net list.

High-Speed Steel.—Inquiry is characterized by a lot of nibbling by various manufacturing interests. The large margins of stock on hand carried by plants as a safeguard during the war are now beginning to disappear, and greater activity in demand is anticipated. Makers of twist drills, reamers, etc., are reported to be doing some buying. Government resale supplies are cutting in somewhat on new business. Some brands are still held at \$1.75 per lb., but \$1.60 is the market average.

Cast-Iron Pipe.—Eastern shops have not yet taken any action in regard to reducing prices, but it is expected that they will this week follow the lead of the shops in the Central West in making a reduction of \$5 per ton. Nominal quotations, New York, which it is expected will be reduced \$5 this week, are as follows:

6-in. and heavier, \$57.70; 4-in., \$60.70; 3-in., \$67.70, and \$1 additional for class A and gas pipe.

Old Material.—There is more of a tendency towards selling on the part of dealers as they become convinced that scrap prices will not experience a material raise for several months. They seem to believe that the for several months. slight flurry coincident with the first attempts to stabilize iron and steel prices was only temporary and they would rather dispose of their stocks than hold for an indefinite future. Prices remain practically unchanged, with the exception of cast scrap, which has dropped a trifle. One leading interest maintains buying prices for heavy melting steel at \$12.75, New York. though the most prevalent quotation is as indicated below. Brokers' and dealers' buying prices, New York,

Heavy melting steel		
Rerolling rails		
Rolaying rails, nominal		
Spel car axles		
Iron car axles		25.00
No. 1 railroad wrought	18.50 to	19.00
Wrought iron track	13.50 to	14.50
Forge fire		9.00
No. 1 yard wrought, long		16.50
Light iron		7.50
Cast borings (clean)		
Machine shop turnings		
Mixed borings and turnings		
from and steel pipe (1 in, minimum		
diameter), not under 2 ft. long		14.00
Stove plate	14.50 to	15.00
Locomotive grate bars		15.00
Mulleable cast (railroad)		13.50
Old carwheels		20.50
Prices which dealers in New York and		are quot
No 1 machinery cast		20.70
No. I heavy cast (columns, building		-0.110
materials, etc.), cupola size		19.50
No. 1 heavy casts, not cupola size		
No. 2 cast (radiators, cast boilers,		
etc.)		16.50

## British Iron and Steel Market

Export Pig-Iron Demand Heavy and Impossible to Fill-Labor Situation Still Disturbed

(By Cable)

LONDON, ENGLAND, May 16.

Cleveland foundry iron is quoted at £7 10s. and barely obtainable at that, with no sellers at any price for second half. Domestic buyers are now standing aside, but there is a big demand for export, which it is impossible to fill. For Cleveland hematite iron from 29 upward is asked, with supplies all but unprocurable.

There is not much buying in finished steel except of ship plates. The labor situation is in a very disturbed condition, the plants of the Ebbw Vale Steel, Iron & Coal Co. and the Blaenavon Co., Ltd., being closed with a lot of trouble elsewhere. Tin-plate shipments are still impossible, owing to strikes. The basis price is about 33s. 6d. to 34s., f.o.t. France is inquiring for large lots of light plates.

We quote per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalents figured at \$4.66 for £1:

East Coast Bessemer. 8 West Coast Bessemer 8 Caveland No. 3 foundry. 7 Cleveland forge 7 Cleveland basic 7 Cole (Durham)	17 10 2 7	06066	\$40.08 41.36 34.95 33.21 34.37					
Furnace	19	0	9.09	4				
Per Tomanganese 95	0	-0	116.50	30			139.	
Tin plate and sheet hars 12	10	0	67.57 64.08					
and upward15	0	0	69.90 Per lb.					
Steel bars19	0	0	3.95c.					
Structural material	10	0	3.56c. 3.43c.	-			 	
17	- 0	0	3.53c.			4	 	- 4
		0	4c.				* *	
Bar iron	10	0	4.26c.				2.4	
Tin plates, 14 x 20 coke 1 112 sheets, 108 lb., f.o.b. Wales	14	0	\$7.92	-	-			

<sup>\*</sup>For export £1 more is asked per ton, a price thus of

## IRON AND INDUSTRIAL STOCKS

Expected Early Action by Congress on Railroad Problem Causes Active Trading in Rails

NEW YORK, May 19.

New high averages for 1919 were made last week by both representative industrial and railroad shares in a market that was at its height Wednesday, when the turnover was 1,872,000 shares, not exceeded since the "submarine panic" day, Feb. 1, 1917, when 1,966,000 shares were traded. In anticipation of the opening of Congress to-day, in the belief that early consideration will be given the railroad problem, market interest turned from industrials to rails, before the week was

The range of prices in active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chalm. com. 297 <sub>8</sub> - 417 <sub>4</sub> Allis-Chalm. pf., 93 - 94 Am. Can com., 537 <sub>8</sub> - 563 <sub>4</sub>	La B
Allis-Chalm. pf., 93 - 94	Lacks
Am. Can com 5374- 56%	Lake
Am. Can pf 10016-103	Limo
	Midva
Am. Car & F. pf 1161,-1161,	Nat-A
Am. Loco. com 78 - 8014	Nat.
Am. Loco. pf10512-106	N. Y.
Am. 25hin com 1101 120	No. 1
Am. Ship. com11642-130	Nova
Am. Ship. pf 90 - 92	Pittsl
Am. Stl. Fdries, 34 b. 36 b.	Press
Baid, Loco, com, 2784-1833	Press
Beth, Steel com. 77%- 78%	Ry. S
Beth. Steel. cl. B 7614 - 79	Ry. S
Case J. I. pf 99 5g-100	Repul
Cent. Fdry. com. 2412-2712 Cent. Fdry. pf. 37 - 5212 Chi. Pneu. Tool. 70 - 71 Colo. Fuel 46 - 48	Repul
Cent. Fdry, pf., 37 - 5215	Sloss
Chi. Pneu. Tool. 70 - 71	Super
Colo. Fuel 46 - 48	Sup. 3
Cruc. Steel com. 72% - 76% Cruc. Steel pf., 97	Trans
Crue. Steel pf., 97	Lin
Deere & Co. pf., 99	U. S. U. S. U. S.
Gen. Electric 163 -16714	17 8
Gt. No. Ore cert. 45% - 46%	17 9
Glf. States Steel 65 19 - 80 14	U. S.
Int Har com 10ct 104	Va. I
Int. Har. com 128 14-134	227
Int. Har. pf 11746	West

La Belle Ir. com101 -105 Lacka. Steel 75 52 - 81 Lake Sup. Corp. 20 - 20 5% Limo Loco 51 - 55
Midvale Steel . 4614- 4914
Nat-Acme 34% - 37
Nat. En. & St. c. 61% - 64
N. Y. Air Brake 117% -120%
Nova Scotia Steel 64 - 69%
Pittsb. Steel com. 99 1/2
Pressed Steel pf. 79 - 81
Pressed Steel c. 101 -102
Ry. Steel Spg. c. 89 - 9114
Ry. Steel Spg. pf.109 -1097%
Republic com 84% - 88%
Republic pf 10319-10378
Sloss com
Superior Steel. 41 - 14
Sup. Steel, 1st pf. 9515-100 Transue-Williams 49 - 5116
Un. Alloy Steel, 47 - 5254
U S Pine com 9514 9236
U. S. Pipe com. 2514-2734 U. S. Pipe pf. 63 - 6414
1'. S. Steel com, 10174-10414
U. S. Steel pf 114% -115%
Va. I. C. & Coke 65 - 6616
Westingh, Elec. 55% - 56%

#### Dividends

The Cambria Steel Co., quarterly, 75c, and extra 25c, pay-

The Dominion Iron & Steel Co., Ltd., quarterly, 1% per cent on the preferred, payable July 1.

The Crucible Steel Co. of America, quarterly, 1% per cent on the preferred, payable June 30.

The Westinghouse Electric & Mfg. Co., quarterly, \$1 on the common, payable July 21, and \$1 on the preferred, payable July 15.

The American Laundry Machinery Co., quarterly, 1 per cent, payable June 1.

The Moline Plow Co., quarterly, 1% per cent on the first preferred and 1½ per cent on the second preferred, payable June 1.

The Niles-Bement-Pond Co., quarterly, 2 per cent on the common, payable June 20 and 1½ per cent on the preferred, payable May 20.

The Pratt & Whitney Co., quarterly, 1½ per cent, payable y 20

### Industrial Finances

The Pittsburgh Steel Co., Union Arcade, Pittsburgh, gives its total sales for the nine months ending March 31, 1919, as \$26,028,203.59, a decrease from the same period in 1918 of \$2,213,827.27. Net profits for the nine months ending March 31, 1919, were \$1,879,208.31, a decrease from the same period in 1918 of \$2,011, 995.21, after setting aside \$1,264,823.18 for estimated excess profits and income taxes, and inventory adjust-

The Trumbull Steel Co., Warren, Ohio, has opened books of subscription for \$2,700,000 preferred stock and \$2,000,000 common, representing portions of increases authorized by stockholders May 17, 1918, and May 7, 1919. On the latter date the capital was increased from \$20,000,000 to \$24,000,000, all preferred. Books of subscription for the new issue are open from May 8 to May 24.

The Pittsburgh Seamless Tube Co., Economy, Pa., has filed notice of the increase in its capital from \$500,000 to \$5,000,000.

# Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, with revisions effective Nov. 1, 1918, in carloads, to points named, per 100 lb., are as follows: New York, 27c.; Philadelphia, 24.5c.; Boston, 30c.; Buffalo, 17c.; Cleveland, 17c.; Cincinnati, 23c.; Indianapolis, 25c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49 1/2c.; Denver, 99c; Omaha, 59c.; minimum carload, 36,000 lb. to four last named points; New Orleans, 38.5c.; Birmingham, 57.5c.; Pacific Coast, \$1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is \$1.315, minimum carload 40,000 lb.; and \$1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c.; minimum carload 46,000 lb.; Denver, 99c.; minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs:

#### Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in. angles, 3 to 6 in. on one or both legs,  $\frac{1}{4}$  in. thick and over, and zees, structural sizes, 2.45c.

#### Wire Products

Wire nails, \$3.25 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.50, and shorter than 1 in., \$2.00. Bright basic wire, \$3.15 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.00; galvanized wire, \$3.70; galvanized barbed wire and fence staples, \$4.10; painted barbed wire, \$3.40; polished fence staples, \$3.40; cement-coated nails, \$2.85 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 60½ per cent off list for carload lots, 59½ per cent for 1000-rod lots, and 58½ per cent off for small lots, f.o.b. Pittsburgh.

#### Bolts, Nuts and Rivets

Large structural and ship rivets	\$3.80
Smaller and shorter, rolled threads. 60-10-5 Cut threads 60-5 Larger and longer sizes 50-10	per cent off list
Machine bolts, c.p.c. and t. nuts, % in. x 4 in.: Smaller and shorter	
Larger and longer	
Carriage bolts, % x 6 in.: Smaller and shorter, rolled threads60-1	per cent off list
Cut threads	
Lag bolts	
Hot pressed nuts, sq. blank	ic. per lb. off list
Hot pressed nuts, sq. tapped	Re. per lb. off list
C.p.c. and t. sq. and hex. nuts, blank3.25	ic. per lb. off list
C.p.c. and t. sq. and hex. nuts, tapped	
% in. and larger	per cent off list per cent off list
Stove bolts, in packages,	i per cent off list at extra for bulk i per cent off list 919.
an prices carry standard extras. Fittsbu	EII IMESIS.

#### Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$52; chain rods, \$60; screw, rivet and bolt rods and other rods of that character, \$60. Prices on high carbon rods are irregular. They range from \$65 to \$75, depending on carbons.

#### Railroad Spikes and Track Bolts

Railroad spikes 9/16 in. x 4½ in. and heavier, and small spikes, per 100 lb., \$3.35 in lots of 200 kegs of 200 lb. each or more; track bolts, \$4.35 per 100 lb. in carload lots of 200 kegs or more, and \$4.90 in small lots. Boat and barge spikes, \$3.85 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh.

## Terne Plate

Prices of terne plate are as follows: 8-lb. coating. 200 lb. \$13.80 per package: 8-lb. coating. I. C., \$14.10: 12-lb. coating. I. C., \$15.80: 15-lb. coating. I. C., \$16.80: 20-lb. coating. I. C., \$18.05: 25-lb. coating. I. C., \$19.30: 30-lb. coating. I. C., \$22.30: 35-lb. coating. I. C., \$22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

#### Iron and Steel Bars

Steel bars at 2.35c. from mill. Prices on bar iron are 2.35c

#### Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card.

	Butt	
Inches F	Black Galv. 50 ½ 24 54 ½ 40 57 ½ 44	Inches   Black Galv.   1
	Lap	Weld
2 1/2 to 6	50½ 38 53½ 41 50½ 37 41 38½	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
Butt	Weld, extra	strong, plain ends
16. 14 and 86 16. 34 to 116 2 to 3	46 14 29 51 16 39 55 16 43	18, 14 and 36 28 15 11 12 12 33 15 20 15 34 to 1 15 39 15 24 15
Lap	Weld, extra	strong, plain ends
2 1½ to 4 4 ½ to 6 7 to 8 9 to 12	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
To the large	jobbing trac	le an additional 5 per cent is

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe have been nine (9) points lower (higher price).

#### **Boiler Tubes**

The following are the prices for carload lots, f.o.b. Pitts-

		ARREST WILLIAM		HUTCOUL ITUE
31/2	to 4 1/2	in	401,   31g to 4	1/2 in —16
21/2	to 314	in	30 L 3 to 3 14	in
				34 in + 1
134	to 2 in	1	19 to 2 %	in +10
			134 to 1	% in +20
210	ndard C	ammercial Se	autous Cold D	rains or Hot Polled

standard	Commercial Seamles.	s-Cold Drawn or Hot Rolled
	Per Net Ton	Per Net Ton
1 in		1 % in
1 1/4 in	267	2 to 21/2 in 177
1 % In		2 % to 3 % in 167 4 in
1 79 111	207	4 16 to 5 in 207

These prices do not apply to special specifications for loco-motive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotia-tion.

#### Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots are as fel-lows:

tates s	tano	iard	ga	ge		in	6	Ca	I.P.	10	a	d	0	LI.	ld		18	l I'	g	er.	1	0	t.s		8.	re	as	101-
ws.			B	211	e	A	11	72	e6	ile	00	1-	-	B	e	88	e	m	e					-				75.
																							4	J€	r	its	per	1D
No.	8 a	nd h	eav	ie	1.												. ,									. 3	50	
Nos.	9 :	13301 1	13 (	h:	RS	6	Ъ.																			. 6	0.00	
NOS.	11	and	1:	ž.,																							1.60	
Nos.	13	and	1.4	١.											-											. 3	5.0	
Nos.	15	and	1 11	i .								-			*					× ×			4			. 3	1,75	
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Nos.	17	to 2	11.																							. 4	.15	
Nos	9.17	to 2	4																							- 4	20	
Nos.	25	and	26																							. 4	25	
No.	27																									, 4	.30	
No.	28	(bas	(e)																						,	. 4	.35	
No.	29																									. 1	.45	

	Go	Iva	ni	:0	d		E	27	(2)	17		0	7 7	4	. 6		(	G	er.	9	r-	_	B	te	8	86	37	n	e	-
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Vos.	12	28.831	d	14	١.							ž.							è			. ,					. ,			
Vos.	15	an	d	11	١.																	. ,				8		. ,		
VAS	17	10	21																											
Vos.	22	to	24			*		8				8	8			. ,				*		. ,		8	8					
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VO.	00					-		ii.				*										6. 1		*	*					

No. 29 No. 30					
	Tin-M	till E	Black	Plate-Besseme	97
Nos. 15	and 16				×300 - 5 -
NOS. 22	TO 24				
Nos. 25	to 27				
No. 28	(base).				
No. 29 .					
No. 30 .					
Nos 30					

# Non-Ferrous Metals

#### The Week's Prices

(	Cents Per	Pound	for Ear	rly Deli	very	
Copper,	New York		Le	ad	Spel	ter
May Lake	Electro-	Tin, New York	New York	St. Louis	New York	St. Louis
1416.00 1516.25 1616.50 1716.50 1916.75 2016.75	15.75 16.00 16.25 16.25 16.50 16.50	72.50 72.50 72.50 72.50 72.50	5.00 5.00 5.10 5.10 5.25 5.25	4.70 4.75 4.85 4.85 5.00 5.00	6.40 6.45 6.45 6.50 6.55 6.60	6.05 6.10 6.10 6.15 6.20 6.25

NEW YORK, May 20.

A distinctly better tone is apparent in all the markets, with transactions fairly heavy and prices higher. Copper has advanced steadily on a fair volume of business. Buying of tin for future shipment when restrictions are removed has appeared. A good business has been done in lead and price levels have risen. Sales of spelter are small, but quotations are sympathetically higher. Antimony is stronger.

#### New York

Copper.—A decidedly good volume of business for nearby delivery is reported in the copper market for practically every day within the last week, and as a result prices have gradually advanced until to-day electrolytic copper is quoted at 16.50c., New York, for May-June delivery, with 16.75c., asked for July. Most producers are unwilling to quote beyond this limit, but if they do a premium is the rule. Lake copper for the same positions is quoted at 16.75c. and 17c., respectively. Thus far export demand has been of small importance, but the little business reported has generally been done at not less than ¼c. per lb. above prevailing domestic prices. Production is still being curtailed and is generally accepted to be not over 50 per cent of capacity.

Tin.—For the first time in many weeks the market has been fairly active. The latter part of last week there were fairly good sales for shipment from the East, subject to conditions when restrictions are removed. This buying movement has extended into the present week. Most of the business that has been done has been transacted at about 52c. to 53.25c., which is an advance of about 3c. over the small business reported in this column and of this nature a week ago. More metal could have been sold if it had been offered, but a respectable tonnage was turned over by all the sellers combined. There has also been a ready sale of English brands in the past week with the price ranging up to 52.25c. From a general market viewpoint buying has been more extensive than in a long time. Nothing definite is yet known regarding the time when Government restrictions will be removed. The London market is higher and spot Straits to-day was quoted £248 per ton.

Lead.—The latter part of last week the market turned decidedly active and large sales were made. In fact, it has been characterized as almost a booming market. Twice within the last week the leading interest raised its price, the first time on Friday to 5.10c., New York, and the second time yesterday to 5.25c. Below the latter price most of the buying referred to took place, but since the last advance there has not been so much business. The total turnover of metal is regarded as having been very heavy in the last few days. Many freely assert that the lowest price for lead has been seen for some time. The outside market has kept pace with the others; in fact, as high as 5.30c., New York, was heard of but unconfirmed. The St. Louis price is 5c.

Spelter.—The market continues very quiet, but firm and steady, with an advancing tendency in prices. This is explained generally by the fact that the other metal markets are higher and not because of any buying movement in zinc. Reports that there has been considerable export business are generally discredited, and it is known that domestic consumers have not entered the market yet extensively. The only buying has been such as has been needed by consumers from week to week. Prime Western for May-June delivery is quoted to-day at 6.25c., St. Louis, or 6.60c., New York, with July held at 6.35c., St. Louis, or 6.70c., New York. Production has been considerably curtailed and some producers are not working over 50 per cent of capacity.

Antimony.—The market is stronger, and wholesale lots for early delivery are obtainable at about 7.75c., New York, duty paid, for Asiatic grades.

Aluminum.—No. 1 virgin metal, 98 to 99 per cent pure, for wholesale lots for early delivery is unchanged at 31c. to 33c., New York.

Old Metals.—Prices are higher in sympathy with the new metal market. Dealers' selling prices are nominally as follows:

	Cents per lb.
Copper, heavy and crucible	
Copper, heavy and wire	
Copper, light and bottoms	
Brass, heavy	
Brass, light	7.75
Heavy machine composition	
No. 1 yellow rod brass turnings	
No. 1 red brass or composition turn	
Lead, heavy	4.50
Lead, tea	
Zine	5.00

### St. Louis

St. Louis, May 19 .- The non-ferrous markets have been quiet with quotations at the close of the week, car lots, as follows: Lead 4.85c. and spelter 6.20c. In less than car lots the quotations are as follows: Lead, 5.10c. to 5.25c.; spelter, 6.50c. to 6.75c.; tin, 72.50c.; copper, 16c to 17c.; antimony, 8.50c. In the Joplin district a better feeling existed among the ore producers because of a stronger metal market, but there was no material change in prices, save that the grading up was indicative of a willingness in some cases to pay a little more. The average price for the week for the district was a shade better in zinc blende, calamine and lead, basis 60 per cent, 40 per cent and 80 per cent respectively. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, heavy red brass, 13.50c.; heavy yellow brass, 9c.; light copper, 11c.; heavy copper and copper wire, 13.50c.; lead, 4c.; tea lead, 3c.; zinc, 3.50c.; pewter, 35c.; tinfoil, 44c.

#### Chicago

Chicago, May 19.-Copper is more active than for Many consumers have been buying generously and the price has advanced to 17c. Lead has advanced twice during the past week and is now quoted at 5.05c. While the Government price of 72.50c. for tin continues in effect until the stock in the hands of the United States Steel Products Co. is disposed of, the jobbing trade is buying future tin quite extensively at from 50c to 53c., for delivery after Government restrictions are removed. Spelter has not been active but has advanced in antimony. There has been interest has been taken in antimony. We quote copper active but has advanced in sympathy with copper. Some at 17c. for carloads; tin, 72.50c.; lead, 5.05c.; spelter, 6.30c. to 6.40c.; antimony, 8.25c. to 8.75c. On old metals we quote copper wire, crucible shapes, 13.50c.; copper clips, 13c.; copper bottoms, 11.50c.; red brass, 13.50c.; yellow brass, 8.50c.; lead pipe, 4c.; zinc, 4c.; pewter, No. 1, 35c.; tinfoil, 37c., and block tin, 50c., all these being buying prices for less than carload lots.

#### Cincinnati

CINCINNATI, May 20.—A turn for the better, as far as prices are concerned, has been made on copper and brass scrap. Heavy copper scrap is firm around 13.50c. and crucible copper at 14c. to 14.50c. Red brass is also stronger at 13.50c. and yellow brass, 8.50c. Block tin pipe is difficult to obtain and has been quoted lately as high as 62c.

## PERSONAL

George T. Bailey, who has served as vice-president of the American Supply and Manufacturers' Associa-



GEORGE T. BAILEY

tion for the past year, was elected president at the closing session of that organization in Pittsburgh on Friday, May 16. Mr. Bailey was born in Pittsburgh, and a graduate from the public schools of that city. In 1888 he en-tered the accounting department of the Carnegie Steel Co. at Pittsburgh, where he remained for about five years. entered the employ of the Indiana Iron Co., Muncie, Ind., as traveling sales He remained with man. that company until the organization of the Republic Iron & Steel Co., which took over the Indiana Iron Co., and he was placed in the sales department of the

Republic company. He went to the Oliver Iron & Steel Co. in 1903 as assistant manager of sales and publicity manager, positions which he continues to fill. Mr. Bailey is well known in the iron and steel trades. He is a member of the American Iron and Steel Institute, the Duquesne, Country and Pittsburgh Athletic clubs of Pittsburgh, and the Hardware Club of New York.

Charles F. Morgan has been made vice-president and assistant treasurer of the Morgan Spring Co., Worcester, Mass. He was formerly active in the management of the business, but of recent years has devoted his energies to the Norcross Brothers Co., building contractor, of which he was the treasurer. He remained as secretary of the Morgan company, however, and now returns to active participation in the conduct of the business.

At the second annual conference of the Connecticut Credit Men's Association at Hartford, May 14, L. M. Allen of the Bridgeport Brass Co., was elected secretary of the executive committee. Zeigler Sargent, treasurer of Sargent & Co., New Haven, addressed the conference on "Exchanging Credit Information—Its Importance, Use and Abuse," and Charles R. Snoke, comptroller, Bullard Machine Tool Co., Bridgeport, discussed "The Financial Statement, Analysis and Value for Credit-Granting Purposes."

W. H. Bohn has resigned as secretary of the Founders' Association of Cleveland to become supervisor of employment and welfare of the Charles B. Bohn Foundry Co., Detroit.

Homer L. Ferguson, president and general manager Newport News Shipbuilding & Dry Dock Co., Newport News, Va., has been elected president of the Chamber of Commerce of the United States as the result of a mail vote of the organization's board of directors.

H. M. Davison, for 14 years with the Hayward Co., New York, has been appointed sales manager of the Ohio Locomotive Crane Co., Bucyrus, Ohio.

John M. Willys of the Willys-Overland Co., Toledo, Ohio, was in Bridgeport, Conn., May 15, visiting the Remington Arms Company plant and investigating its adaptability for the manufacture of parts for the light four car.

David Evan Roberts, consulting engineer, Swansea, Wales, has completed a month's tour of various American steel plants, particularly those making electric steel. He sailed for home Saturday, May 17.

Judge E. H. Gary, chairman United States Steel Corporation, visited the new shipbuilding yards of the Chickashaw company at Mobile, Ala., and the new Fairfield steel works of the Tennessee company in Birmingham, Ala., last week, accompanied by James A. Farrell, president; George F. Baker, Henry C. Frick, Percival Roberts, Jr., and John Reis, vice-president of the Steel Corporation. Judge Gary made no other public statement than to indicate satisfaction with the new plants.

Charles Wheeler has resigned as superintendent of the Spartan Machine Co., Montreal, Que., and will take an extended trip to Australia. Before associating himself with the Spartan Machine Co. Mr. Wheeler was general superintendent of the St. Lawrence Machinery Co.

L. A. Danse, formerly general foreman of the heattreating department of the Lincoln Motor Co., Detroit, has resigned to accept a position in the engineering department of the General Motors Corporation. H. M. Bray, his assistant, will take over his duties as foreman.

Frank Farrell has been appointed assistant superintendent of blast furnaces and the steel department of the Youngstown Sheet & Tube Co., Youngstown, Ohio, succeeding Charles H. Elliott, resigned, to become identified with the Weirton Steel Co., Weirton, W. Va. Mr. Farrell has been second assistant. A. W. Smith, third assistant, advances to second, his former office being abolished. Employees of the departments presented Mr. Elliott with a sterling silver set of 192 pieces, while mill superintendents gave him a diamond stickpin and pair of cuff buttons.

James Inglis, president American Blower Co., sailed from New York on May 15 as a member of a commission appointed to confer with European cotton interests on post war conditions in the cotton industry throughout the world, and with special reference to the proposed world cotton conference to be held at New Orleans next October.

Harry G. Bow, Canton, Ohio, for 32 years engaged in the manufacturing and selling of pressed steel specialties, has been appointed president and general manager of the Wheeling Ceiling & Roofing Co., Wheeling W. Va., manufacturer of steel ceilings, shingles, roofing, pipe and gutters. Otto Hess is secretary and general superintendent and N. S. Goudy sales and advertising manager.

William J. Hepburn, formerly superintendent of the maintenance shop of the United States arsenal at Watertown, Mass., has joined the sales force of the Niles-Bement-Pond Co., Frick Building, Pittsburgh. Previous to going into the service, Mr. Hepburn was connected with the Bryant Chucking Grinder Co., Springfield, Vt.

Thomas F. Murphy, formerly in the sales department of the American Sheet & Tin Plate Co., Pittsburgh, is now with the Stark Rolling Mill Co., Canton, Ohio, and will cover western Pennsylvania, western New York, Ohio and northern West Virginia for that company.

Charles Nagle has been added to the New York office force of the Homestead Valve Mfg. Co., Inc., Pittsburgh, covering the trade in New York and Brooklyn. F. H. Thorn has been added to the Pittsburgh office, and will call on the trade in that district.

J. E. Morgan has been appointed general sales manager of the Eastern Refractories Co., with office at 438 Commercial Trust Building, Philadelphia. Mr. Morgan has been with the Harbison-Walker Refractories Co., for 17 years, and the last eight years has been district sales manager for the latter concern in the Philadelphia district. W. H. Kelly, who has been special representative of the Harbison-Walker Refractories Co., for the past eight years, has resigned to become associated with the Eastern Refractories Co., as sales manager for the Pittsburgh district with offices at 1214 Bessemer Building. J. W. Dowling, who has represented the Harbison-Walker Refractories Co., in the Youngstown Valley district for the past 10 years, has resigned to accept the position as sales manager of that district for the Eastern Refractories Co., with offices at 1214 Bessemer Building, Pittsburgh.

George H. Hunt has been appointed sales manager of the wheel division, Detroit Pressed Steel Co., manufacturer of Disteel wheels. Mr. Hunt for several years was manager of the Stromberg Carburetor Co., and for the last year he has been Detroit representative for the Edward G. Budd Mfg. Co., Philadelphia, and the Budd Wheel Corporation.

C. C. Ramsdell, vice-president Gilbert & Barker Co., West Springfield, Mass., will soon leave for a threemonths business trip to Europe.

E. L. Ryerson, Jr., vicepresident and works manager Joseph T. Ryerson & Son, Chicago, has returned after about two years of absence. Mr. Ryerson left early in 1917 to handle production engineering work, as a civilian, with the Aircraft Production Board, Washington. Later he was commissioned first lieutenant in the Signal Corps, U. S. Army, Aviation Section, Production. He was soon promoted to a captaincy and at that was transferred to the Division of Military Aeronautics, as engineer officer and assigned to Field, Riverside, March



E. L. RYERSON, JR.

Cal. Mr. Ryerson took flying instruction at March Field and qualified as a pilot, receiving rating as reserve military aviator.

C. S. Daniels, formerly with the Burnside Steel Co., Chicago, has been appointed purchasing agent of the Chicago Electric Steel Co., Chicago.

Lieut.-Col. T. S. Hammond has been released from the army, with which he saw overseas service, and has returned to his former duties as secretary of the Whiting Foundry Equipment Co., Harvey, Ill. R. E. Prussing, formerly a captain in the Ordnance Department, has again taken charge of the Detroit office at 570 Penobscot Building.

Roland B. Page has recently been appointed Eastern district sales manager for Lea-Courtenay Co., New York, manufacturers of centrifugal pumping machinery. His new offices are at 610 Broad Exchange Building, Broad and Franklin streets, Boston.

James W. Prenter, Eastern sales manager Pittsburgh Screw & Bolt Co., Land Title Building, Philadelphia, has recently taken over the New York territory, retaining his headquarters in Philadelphia.

A. E. Hitchner has been appointed manager of the mining section, industrial sales department, Westinghouse Electric & Mfg. Co., with headquarters at East Pittsburgh, Pa. Mr. Hitchner is a graduate of Rutgers College, class of 1904. He served a two-year apprenticeship with the Baldwin Locomotive Works, and spent three years with the Link-Belt Co. on construction work, before joining the Westinghouse sales organization as industrial salesman in its Philadelphia office in 1909.

Hiram P. Maxim, president Maxim Silencer Co., Hartfurd, Conn., will on June 5 present a paper on "Sound," at a joint meeting of the local engineers.

Carl H. Smith, secretary St. Louis Chamber of Commerce Safety Council, has resigned to accept a position as field secretary for the National Safety Council.

W. G. Canion, inventor of the Canion air brake, and president of the Canion Air Brake Co., Baltimore, was badly hurt on May 14 when his automobile struck a pole near Baltimore. His son, Willoughby, nine years old, died as a result of the accident.

F. W. Roberts, general manager Sparrows Point plant, Bethlehem Steel Co., has been appointed head of the Liberty Housing Co., in charge of the development at Dundalk and St. Helena, Md., of the Emergency Fleet Corporation. He succeeds Edward H. Bouton, who will sail for Poland soon.

L. H. G. Bouscaren, former district representative of the Stone & Webster Corporation in Youngstown, Ohio, returned recently from France and Belgium after a two months' tour of both countries. Mr. Bouscaren was awarded a contract to rebuild the schools and municipal buildings in Louvain, a contract involving about \$2,500,000. To finance the work the city of Louvain proposes to sell 5 per cent bonds. Stone & Webster have established an office in Paris and Mr. Bouscaren While district manager in expects to return there. Youngstown he supervised many important construction contracts for iron and steel companies. Mr. Bouscaren made a thorough inspection of the blast furnaces and steel plants in Belgium, which he says were effectually wrecked by the Germans.

M. G. Carhart and George B. Cross, formerly with the Industrial Electrical Furnace Co., now represent the Detroit Electric Furnace Co. under the firm name of Carhart & Cross, with headquarters at 1401 Monadnock Building, Chicago.

Herbert E. Herrod, president and secretary Mahoning Valley Employers' Association, Youngstown, Ohio, has resigned to locate in Pontiac, Mich. He went to Youngstown four years ago from Chicago. During the war he was director of the American Protective League in Mahoning County.

The Reliance Electric & Engineering Co., Cleveland, has appointed Langdon S. Simons manager of its Boston office at 10 High Street. Mr. Simons was a captain in the United States Army.

C. H. Nold has been appointed district sales manager of the Harbison-Walker Refractories Co., Pittsburgh, with offices at 411 Morris Building, Philadelphia, succeeding J. E. Morgan, resigned. J. T. King will continue his connection with that office.

Robert Bentley, president Ohio Iron & Steel Co., Youngstown, Ohio, has been elected president of the Youngstown Chamber of Commerce, succeeding Leroy Manchester, secretary and attorney for the Youngstown Sheet & Tube Co. C. S. Robinson, vice-president and general manager of Sheet & Tube Co., was elected second vice-president of the chamber.

Ray Timmerman, who was until recently a lieutenant in the United States Navy, has been appointed Philadelphia sales manager for the Reliance Electric & Engineering Co., Cleveland.

P. F. Shearan, who recently retired from the J. J. McCabe Lathe & Machinery Corporation, New York, to engage in the second-hand machinery business for himself under the title of the Shearan Machinery Co., has returned to the McCabe corporation in the position he formerly held as treasurer. He will have complete charge of the company's sales and advertising.

The Heine Safety Boiler Co., St. Louis and Phœnixville, Pa., has appointed Charles H. Stoddard as its consulting marine engineer. Mr. Stoddard is a native of California. He received his technical education at the Leland Stanford, Jr., University. On Jan. 1, 1916, he went to the Moore & Scott Iron Works and held the position of chief engineer of that company, now called the Moore Shipbuilding Co., and assisted in its expansion from a repair shop, employing 250 men, to a shipyard with 9500 men, holding contracts for 42 steel cargo boats for the United States Emergency Fleet Corporation.

Edward J. Kearney, member of the firm of Kearney & Trecker Co., Milwaukee, Wis., manufacturer of milling machines, has been serving as head of the successful Wisconsin Victory Loan organization. After graduation in 1893 from the Iowa State College of Agriculture as mechanical engineer, he became a designer of machinery with the Kempsmith Machine & Tool Co., Milwaukee, where the other members of his present firm, Theodore Trecker, was employed. The Kearney & Trecker Co. was established in 1898.

Marcus L. Filley, for the past 10 years New York sales manager of the Deforest Sheet & Tinplate Co., Niles, Ol.lo, has resigned to become Eastern sales manager of the Mahoning Valley Steel Co., Niles, effective May 15. Mr. Filley will continue to occupy his present suite of offices at 30 Church Street, New York.

R. A. Bedford, a director of John Bedford & Sons, Ltd., Sheffield, England, producer of high-speed and special cutting steels, and C. Roberts, managing director H. Fuller & Co., Ltd., Sheffield, manufacturer of heat-treating equipment, who arrived in this country recently, are stopping at the Hotel Seymour, 50 West Forty-fifth Street, New York. Mr. Bedford is desirous of arranging for the importation of his company's products and Mr. Roberts plans to sell patent rights covering also heat-treatment salts.

F. S. Thompson, director and secretary of the Oliver Machinery Co., Manchester, England, will arrive in New York in a few days for a visit of several weeks.

William G. O'Malley, general works manager Crucible Steel Co., Midland, Pa., has resigned. Mr. O'Malley became connected with the company in 1913 as general master mechanic and was promoted to general works manager in October, 1916. Before going to Midland he was connected with the Lackawanna Steel Co. for a number of years, rising from machinist's apprentice to general superintendent. On the day of his departure from Midland his friends and co-workers presented him a diamond ring and cuff links.

E. C. Ryan has been appointed manager of the Chicago branch of the Electric Controller & Mfg. Co., with office in the Monadnock Building, that city. Mr. Ryan was formerly in the company's New York office.

# OBITUARY

#### Samuel W. Croxton

SAMUEL W. CROXTON, a pioneer iron manufacturer of the Central West, having been identified with that industry for about 50 years, died at his home in Cleve-



S. W. CROXTON

land May 18, after an illness of several months, aged 74 years. He was born in Magnolia, Tus-carawas County, Ohio. After completing his education in the village school, he taught school for a short time, and served in the Quartermaster's Department of the Union Army during the greater part of the Civil War. After being discharged from the service, he became shipping clerk of the Canal Dover blast furnace. This was built in 1855, and was purchased in 1865 by Daniel P. Rhodes, who a year before had become fatherin-law of the late Senator M. A. Hanna.

Croxton was connected with the Canal Dover blast furnace 40 years, advancing from his first position to bookkeeper, cashier, manager and president of the company. In 1881, Mr. Rhodes gave Mr. Croxton an option on the furnace for \$80,000, and the latter with two associates, J. P. Burton, a western iron man, and Edward M. Davis, of Philadelphia, took over the property and formed the Penn Iron & Coal Co. The furnace, which has been rebuilt three times since 1861, is still operated under the name of that company, being now one of the M. A. Hanna & Co.'s interests.

Mr. Croxton moved to Cleveland 28 years ago, and established offices for his company in that city. About 10 years ago he retired from the management of the Canal Dover furnace, control being sold out to the present owners. Mr. Croxton was one of the organizers of the Cleveland Furnace Co. in 1902, for some time vice-president of that company, and one of its directors up to his death. His son, D. T. Croxton, is presi-

dent of this company. He had various other business interests in Cleveland, being a director of the Central National Bank, and having served on the advisory board of the Citizens' Savings & Trust Co., and as vice-president of the Cleveland Pittsburgh Railroad Co. He was a member of the Union and Cleveland Athletic Clubs, Cleveland Chamber of Commerce and the Engineer's Society.

Mr. Croxton was a man of sterling integrity, who believed in giving everybody a square deal, and was held in the highest esteem by a host of personal friends and business associates. He is survived by Mrs. Croxton, two sons, H. A. Croxton, Massillon, Ohio, D. T. Croxton, Cleveland, and three daughters.

Hon. David Tod, aged 48 years, one of the most influential and distinguished citizens of Youngstown, Ohio, died May 14 from typhoid-pneumonia. Mr. Tod spent February and March with his wife and friends in Camden, S. C., where he contracted typhoid fever, symptoms of which first developed when he was en route home the first of April. Mr. Tod's interests were many and diversified and his family has been identified with the development of the iron and steel industry in the Youngstown district since its earliest beginnings. He was a director and member of the executive committee of the Brier Hill Steel Co.; vicepresident of the Commercial National Bank; director of the Bessemer Limestone Co., the Stambaugh-Thompson Co., and Ward Nail Co., Struthers and many other concerns. Mr. Tod built the Youngstown & Suburban Railway, from Youngstown to Leetonia, 20 miles, an interurban trolley line. For several years he was president of the old William Tod Co., which was founded by his father, William Tod. This company was later absorbed by the United Engineering & Foundry Co., Pittsburgh, which is operating its plants. Mr. Tod was a staunch Republican, served two terms in the State Senate and in 1914 was a strong candidate for the Republican nomination for governor of Ohio, being defeated by a small vote. His grandfather, David Tod, pioneer iron maker, was Ohio's famous Civil War governor. Fred Tod, assistant general sales manager of the Brier Hill Steel Co., is a brother.

EMIL SWENSSON, civil engineer, traction expert, and technical author and inventor, died at his home in Pittsburgh on Tuesday evening, May 13, after an illness lasting over four or five years. Mr. Swensson was actively identified in an engineering capacity in many important public works, and in other ways in the Pittsburgh district, and was widely known in the structural steel industry. For many years he was connected with the Keystone Bridge Works, at that time operated by the Carnegie Steel Co., but later taken over by the American Bridge Co. He was born Dec. 12, 1858, in Aaldorg, Denmark, and was educated at the Gymnasium at Halmstad, Sweden, at the Chalmers Polytechnic Institute at Gothenberg, where he was graduated in 1879, at Munich, Bavaria and Zurich, Switzerland. He came to the United States in 1881 and a year later went to Pittsburgh.

FRED Holz, aged 67 years, a retired manufacturer of Cincinnati, died suddenly May 12. He had been in bad health for some time, following an attack of influenza. He was well known to the machine tool trade all over the country, and formerly was president of the Cincinnati Milling Machine Co., when it was first or ganized, but retired 15 years ago. He is survived by his son Herman Holz, president National Machine Tool Co., Cincinnati.

EDWARD C. HALL, president Hall Safe & Lock Co., Cincinnati, died of heart disease at his residence in that city May 16, aged 68 years. He was the eldest son of the late Joseph L. Hall, inventor of fire and burglar proof safes, and founder of the company bearing his name. He was an active member of the Cincinnati Business Men's Club, Chamber of Commerce, Automobile Club and other social and business organizations.

DAVID T. RICHARDS, president and treasurer Hill & Griffith Co., Cincinnati, foundry supply dealer, died in a hospital in New York, May 12 following an operation for appendicitis. He was 48 years old and had been in the foundry supply business nearly 20 years.

# Lead of United States in Shipbuilding

An analysis of Lloyds Register for the first quarter of 1919, just made by the American Chamber of Commerce in London, shows there is twice the amount of merchant shipping under construction in the United States than in the United Kingdom. Shipbuilding conditions in Great Britain are nevertheless regarded as very favorable.

The total amount under construction at the end of March in Allied and neutral countries is given by the register as 7,796,266 tons. Of this, Britain's share was 2,254,845 tons compared with 4,185,523 tons in the United States.

British construction included 603 steel steamers of 2,220,816 tons, and a remainder of 39 ferroconcrete barges, one motor vessel and 49 steel sailing ships. The number of large vessels under construction is considered a particularly favorable sign: four between 10,000 and 12,000 tons, eight between 12,000 and 15,000 tons, six between 15,000 and 20,000 tons, and four between 20,000 and 25,000 tons.

Comparison with the figures for June, 1914, the last quarterly period before the war, shows that while figures for the United Kingdom have risen by 500,000 tons, the tonnage building elsewhere has increased by more than 4,000,000 tons. The increase is really greater, as Germany and Austria were included in the earlier figures and not in the latter.

The American Chamber in London points out that the 4,185,523 tons of the United States constitutes 75 per cent of the total construction outside the United

## Says South America Will Favor British

The American Chamber of Commerce in London understands that Gordon Ross, former financial editor of the Standard, Buenos Aires, in the course of a lecture on "Trade Opportunities in South America" at the London School of Economics, said the British neglect of advertisement had had important results in South America; that British manufacturers should study local conditions and give their customers what they want. Familiarity with the Spanish language is essential, catalogs should be published in the language and prices quoted in the currency of the country.

During the war, Mr. Ross is reported to have said, the United States has been trading with the South American Republics, but he believes the British will be given preference over the United States. In the republics there is a jealous fear of the extension of the influence of the United States. In South America it has been cynically said that the Monroe doctrine means not so much America for the Americans as America for the North Americans.

He believes, according to the American Chamber at London, that Great Britain had only to open its arms commercially and the South Americans will run to them, and the competition of the States need not be feared.

#### Tool Builders' Resolutions

The National Association of Machine Tool Builders at its convention in Atlantic City last week, to which space was devoted in The Iron Age of May 15, discussed the feasibility of inaugurating a general advertising campaign with a view of giving the industry the place of importance it deserves in the lay mind. To many, including even manufacturers who are buyers of tools, the fundamental importance of machine tools is not properly realized. The convention decided by resolution to have a letter vote taken so that the members might express their attitude on the subject.

Realizing that the advocates of introducing the metric system in this country are unremitting in their propaganda, the association adopted a resolution again placing itself on record as opposed to "any and all attempts to make the adaption of the metric system compulsory in the United States."

Interest in organization for foreign trade under the Webb-Pomerene law was most keen throughout the con-

vention, and was stimulated by the address of Allen Walker, manager of the Foreign Trade Bureau of the Guaranty Trust Co. By resolution a committee was appointed to carry on an investigation as to the possibilities under the new law.

Dr. S. W. Stratton, Chief of the United States Bureau of Standards, in the course of his address describing the work of his department, suggested that the association appoint a committee to co-operate with the bureau, and a resolution provided for the appointment of such a committee.

# England as a Steel Competitor

Jerome R. George, chief engineer Morgan Construction Co., Worcester, Mass., who has been abroad for several months in the interest of his company, writes from London, under date of April 26, to the Evening Gazette of Worcester, as follows:

If business ever is to be good, it should be good in America. America can now deliver steel rails to any place in the world at about the cost of putting rails on carriages here in England. Machinery costs are now about 15 per cent higher in English shops than in Worcester, and when the Government bonus of £4 per ton of pig iron is discontinued at the end of this month (April), as it will be, English foundry iron will advance in price £2. [It was \$22 in April and is \$35 now.]

Great Britain produces about one-fifth as much steel as the United States and employs about three-fifths as many workers in the industry. America can, therefore, barring economic or political barriers, hope to command a large foreign market in iron, steel and machinery, so long as labor conditions remain stable in America and continue unstable here.

As Great Britain, and all Europe for that matter, must continue to be an exporter in order to live, costs of manufactured goods sold in competitive markets must eventually come down to a competitive basis. Therefore it will be well in taking on European business to keep in mind the declining exchange value of the pound sterling sure to result from continuing wage advances and bad trade balances.

Contracts should specify payments in New York funds, and it will be good business to ask for a substantial payment with the signing of orders.

## Meeting of the American Iron and Steel Institute

The outlook is that there will be a record-breaking attendance at the meeting of the American Iron and Steel Institute at the Hotel Pennsylvania, New York, Friday. Already 1200 applications for tickets to the banquet Friday night have been received. The previous record was 1125, and it is expected that 1300 will be in attendance. Most of the speeches at the banquet will be informal, but Joseph G. Butler, Jr., Youngstown, Ohio, will deliver a formal address on "Iron and Steel Men in the War."

The meeting will open Friday morning with the presidential address by Judge Gary, to be followed by the reading of papers.

## Greater Activity in Structural Lines

Bridge and structural shops booked 40 per cent more business in April than in March, according to the records of the Bridge Builders' and Structural Society, 50 Church Street, New York, collected by its secretary, George E. Gifford, which show that 24% per cent of their capacity, or 44,100 gross tons, was contracted for in the past month, as compared with 17% per cent in March, 12% per cent in February, 12 per cent in January, and 64 per cent in April, 1918. The average business taken on in the four months of this year is less than 17 per cent of capacity, as against 55 per cent in the same period of 1918.

The Seaboard Steel & Manganese Co., with offices at 50 East Forty-second Street, New York, and blast furnaces at Temple, Pa., has been placed in charge of a committee of creditors of which S. S. Freeman of the Port Henry Iron Ore Co., 2 Rector Street, New York, is chairman.

# Supply and Machinery Men at Pittsburgh

(Continued from page 1375)

at least until such time as trade adjustment is more complete.'

Mr. Nicklis quoted at some length from a memorandum prepared by P. M. Brotherhood, vice-president Manning, Maxwell & Moore, Inc., giving the latter's views gained from a recent visit abroad. Of England, Mr. Brotherhood said:

"There is an enormous amount of small supplies owned by the British Government which is being sold at auction, and being disposed of very rapidly. naturally interferes with general business in England." Mr. Brotherhood first visited England in February. Returning there two months later, he found the situation much improved. He said he found that as soon as the armistice was signed British manufacturers began the manufacture of high-speed drills and cutters, the making of which they are now pursuing diligently. He expressed a belief that for a time the only drills ordered in the United States will be those of carbon steel. In France, Mr. Brotherhood found excess war supplies being disposed of very slowly, and the supply business was good. Large quantities of high-speed drills and cutters were being purchased from England. He said there was more or less of an embargo on American files, and that manufacturers in Switzerland were dumping large quantities of supplies into France, particularly chain blocks, hoists, etc.

#### Belgium Denuded of Tools and Machines

In Italy, Mr. Brotherhood found business practically There was an embargo on American drills and files, against which the dealers there were protesting, inasmuch as they could buy these American products in London, but could not ship them direct. Mr. Brotherhood said that very little business can be expected from Italy for some time to come. Belgium he found to be stripped of supplies and machine tools. "The Germans took about everything," he said, "and as the supplies there are now very limited, this should be one of the best fields, not only for supplies, machinists' tools, etc., but for machine tools also. The Belgians are holding off, however, because they have no money, and the banks are not yet in a position to extend credit. soon as Belgium gets from Germany a portion of the indemnity due to her, the people can start in and re-I consider the Belgian field one of the best there is for America."

The report of Secretary-Treasurer Thomas A. Fernley stated that the association now has 228 members, 90 having been added in the past twelve months. The report went exhaustively into the many activities of the past year, particularly with regard to war effects.

Among other things, he said:
"It was shown by the monthly reporting system (inaugurated by the War Industries Board) that over 1400 wholesale distributors handled 3,500,000 tons of steel products out of a total of 35,000,000 tons of steel for the United States. Out of this 35,000,000 tons, it is estimated that about 5,000,000 tons constitute the kind of steel products which lend themselves to handling by wholesale distributors, while the balance consisted of structural steel, plates and bars and the vast variety of manufactured goods for use in construction work, or in the manufacture of other items, which would not involve distribution by the wholesaler. Therefore it might be properly concluded that 75 to 80 per cent of the steel products which lend themselves to handling by distributors pass through the hands of the wholesaler."

#### Questions Buying on Declining Market

At this session there was a discussion of price tendencies, the general thought being that prices of some products are still too high, particularly those entering building work, while others, like nails and wire, are being sold near cost. E. E. Strong, in indorsing what others had said about the desirability of building and general business going forward, said: "There is one

fly in the ointment, and that is this: Has anyone here ever known buying to be stimulated by a falling mar-ket?" He went on to say that if large producers would formulate a price, and then announce that it would be effective for a definite time, it would be a wholesome influence.

In regard to manufacturers' guarantees against declines, the consensus of opinion was in their favor, although some members said they regarded such guarantees as unsound business policy. One member said he regarded conservative buying as the only correct policy, and that dealers should not ask the manufacturers to "hold the bag" for them.

Several addresses on trade subjects pertinent to the business of the dealers occupied the attention of the members at the Thursday morning session, particularly

as to conditions in specific products.

The Thursday afternoon session was devoted to further discussion of trade problems, and the expressions of views were numerous. The National Association's meetings are invariably notable for the earnest thought that is given to the many and increasing problems which confront the dealer in supplies and machinery. On the most complex of these, light is invariably thrown by the advisory secretary-treasurer, T. James Fernley, as well as by the members generally. The discussions were continued until noon Friday, when the convention adjourned. At the convention 60 per cent of the houses connected with the organization were represented. Eleven new members were admitted. The next convention will be held at Atlantic City.

#### Officers for Ensuing Year

J. D. Nicklis was re-elected president. Other officers elected were: First vice-president (in charge of machinery interests), George H. Cherrington, Brown & Zortman Machinery Co., Pittsburgh; second vice-president, Crannell Morgan, the Hardware Supply Co., Akron, Ohio; executive committee (terms expiring 1920) Edward P. Welles, Charles H. Besly & Co., Chicago, and R. F. Blair, Pittsburgh Gage & Supply Co., Pittsburgh; (terms expiring 1921), C. C. Coventry, Cleveland Tool & Supply Co., Cleveland, and Ernest L. Davis, S. H. Davis Co., Boston. Thomas A. Fernley was re-elected secretary-treasurer, and T. James Fernley. ley, advisory secretary-treasurer.

#### Entertainment at the Conventions

The entertainment provided for those in attendance at the sessions of the American Supply and Machinery Manufacturers' Association and the National Supply and Machinery Dealers' Association, was in the hands of the entertainment committee, of which George T. Bailey, assistant manager of sales of the Oliver Iron & Steel Co., was chairman. Splendid entertainment in every way was provided for the delegates and also for the ladies in attendance. The ladies' reception committee was composed of Pittsburgh women, and was headed by Mrs. William G. Clyde, wife of the general sales manager of the Carnegie Steel Co.

The Elliott-Blair Steel Co., New Castle, Pa., maker of cold-rolled strip steel, has arranged for the building of a new plant at Mercer, Pa., to replace the one destroyed by fire some months ago. The company states it will not be in the market for any machinery. boilers or engines, as the plant will be operated entirely by electric power, and also that it has arranged for all repairs and replacement of machinery,

The Wharton Steel Co., Wharton, N. J., has sold five tracts of iron ore properties in Rockaway Township to the Thomas Iron Co., operating in the same district The property comprises the Allen mine, the Teabo mine and unnamed locations, and totals close to 400 acres.

Edward F. Clarke, president Liberty Steel Co. and associates, are promoting a new sheet steel and timplate plant to be located in Newton Falls, Trumbull County, Ohio.

# Machinery Markets and News of the Works

# SOME IMPROVEMENT NOTED

## More Buying and Better Tone in Machine Tool Markets

#### E. W. Bliss Co., Brooklyn, Buys More Than \$400,000 Worth of New Equipment-One Railroad Inquiry

A better tone is evident in machine-tool markets, and there is some increase in buying. The E. W. Bliss (o., Brooklyn, was one of the largest purchasers of the past week, its orders aggregating about \$350,000 for machine tools and \$100,000 for cranes for an addition to its plant. Another inquiry, which may have some significance in view of the possibility of Congress appropriating funds for the railroads, is from the Baltimore & Ohio Railroad for six tools. Some of the Eastern automobile companies may come into the market soon for equipment. More buying by the shipyards is also expected if contracts for ships result from President Wilson's cable lifting the embargo on foreign shipbuilding work in American yards. Export inquiries are fairly numerous, but little buying for foreign account has yet been done.

In Chicago there are no large orders, but a continuance of miscellaneous scattered business, with the aggregate thus far in May better than in April. The Teeter-Hartley Motor Co., Hagerstown, Ind., is buying in the Chicago market.

Business from automobile manufacturers continues in fairly good volume at Cincinnati and at other dis-

tributing centers in the Central West. Cincinnati machine-tool builders believe that railroad orders will soon develop. Many tool manufacturers are preparing to exhibit at the joint convention of master mechanics and car builders at Atlantic City the week of June 18 to 25.

At Cleveland it is noted with interest that business outside of the automobile field is improving. The largest order for screw machines reported for some time comes from the Columbia Graphophone Co., Bridgeport, Conn., covering 62 machines.

Milwaukee machine-tool builders note a slight improvement. At Detroit automobile manufacutrers are increasing output and are confronted with a shortage of labor. There is a better demand in New England for

The Haynes Automobile Co., Kokomo, Ind., will build additions to its plant and will soon call for new equipment. The Muncie Wheel Co., Muncie, Ind., will remodel its works for the manufacture of automobile wheels.

The War Department will take over some of the private ordnance plants throughout the country and use them as Government arsenals for the manufacture of artillery. The plant of the Symington-Anderson Co., Rochester, N. Y., will be used in this manner, and a Buffalo forge works may also become an arsenal. These plants will work in conjunction with the Watervliet

Crane business is not active, but a few orders are being placed. About 50 to 60 cargo-handling cranes will probably be required for terminals on the New York State barge canal.

## New York

NEW YORK, May 20.

In some lines of machine tools there is slightly better Tool-room equipment is being purchased, and this believed to presage an increased demand within the near future for manufacturing tools. Several builders of planers, lather boring mills, slotters, shapers and other tools have removed within the past week orders from the E. W. Bliss Co. Brooklyn, which is building a large addition to its plant his purchases of tools totaled about \$350,000, while an order for six cranes, three of 50-ton capacity and three of 30-ton. went to the Shaw Electric Crane Co.

The Watertown Arsenal, Watertown, Mass., has issued an inquery for a gate shear, plate punch, friction saw and a hydraulic beam bender, bids to be in by May 28. Plans have been approved for a new structural shop at the arsenal, but appropriations from Congress must be obtained before the work can proceed. A considerable quantity of equipment will be required if the shop is built.

Export inquiries are numerous but comparatively little haying is being done. A majority of these inquiries emanate export houses and ask for commissions, which many of the leading machine-tool manufacturers are unable to give them because of exclusive selling arrangements in the countries to which the tools would be shipped.

The Parker Co., 165 Broadway, is inquiring for four highspeed wheel-turning lathes, two axle-turning lathes, eight screw-cutting machines, two shapers, 10 portable boring machines for locomotive cylinders and a lathe for milling bolts and puts, all for shipment to Siberia. Edgar Bloxham, Inc. Grand Central Terminal, has issued an inquiry for a list of tools for the French High Commission.

Reference was made in this column last week to an inentry issued by the Tropenas Converter Co., 2243 Nostrand

Avenue, Brooklyn, for machine tools and foundry equipment wanted for shipment to France. This list follows: 4 vertical milling machines, No. 3 Brown & Sharpe, or

- equivalent
- 6 gear hobbing machines, Reinecker No. 3, or equivalent. 1 universal milling machine, No. 2A or No. 3A Brown & Sharpe, or equivalent
  - lathe for producing milling cutter blanks
  - automatic milling cutter sharpening machines, automatic milling cutter sharpening machines for bobs.
  - Potter & Johnson automatics No. 5A or equivalent. Potter & Johnson automatics No. 6A or equivalent.
- Gisholt automatics G or H or equivalent, for bars from 110 to 125 mm.
- 2 Gridley single spindle automatics, or equivalent, for 82 or 88 mm. bars.
  - medium low-swing lathe.
  - drill presses, Cincinnati or equivalent, 28-in. stroke, small planer 800 mm, travel by 600 mm, width.
- 2 grinding machines, Norton or equivalent, 600 mm. between centers.
  - 2 Internal grinding machines
- radial single spindle drill presses, Cincinnati or equivalent 800 mm. reach.
- 2 double adjustable spindle boring mills for small cyl-
- 1 grinding machine with magnetic face plate to grind faces of piston rings
  - 2 tool hardening furnaces, Mecker or equivalent, 2 case hardening furnaces, Mecker or equivalent, 600 mm.
- wide, 600 mm. deep, 300 mm. high. 2 enameling furnaces for bicycle and motorcycle frames
- 1 complete installation for acid pickling of malleable iron castings.
  - 1 complete nickel plating outfit.
    - medium-size press, Bliss or equivalent.
  - complete installation for small malleable iron foundry.

1 special machine to cut steel tubes for the production of motorcycle frames.

Some of the Eastern automobile companies are expected to come into the market soon for equipment. The Locomobile Co., Bridgeport, Conn., has been seeking information from machine-tool manufacturers preparatory to its decision on a list of equipment for the manufacture of trucks and passenger automobiles. Brewster & Co., Long Island, N. Y., manufacturers of automobile bodies, will engage in other lines of automobile manufacture, and a list of equipment will soon be inquired for through the J. G. White Engineering Corporation, 43 Exchange Place, New York. The International Arms & Fuze Co., Bloomfield, N. J., is attempting to dispose of the remainder of its shell and fuse-making equipment, consisting of several hundred tools, through a New York machinery firm, and is reported in the trade to be considering future manufacturing plans. Various reports have been heard regarding the future activities of the Wright-Martin Aircraft Corporation for its plants at Long Island City, N. Y., and New Brunswick, N. J., but no official announcement has been made.

The first railroad inquiry in the East since the Railroad Administration refused to accept the steel prices recommended by the Industrial Board of the Department of Commerce has come from the Baltimore & Ohio Railroad, which wants three turret lathes and three boring mills. Several of the Eastern roads are known to be greatly in need of new equipment, which may be bought as soon as Congress has authorized the funds.

The recent announcement by President Wilson, cabled from Paris, that American shipbuilding companies are now free to accept foreign shipbuilding contracts has infused some hope that shipbuilding activities may be speeded up to such an extent as to require additional plate-working machinery, tools and cranes.

The Material Handling Machinery Manufacturers' Association has prepared a set of specifications for cargo-handling cranes which are to be purchased by the State engineer of New York for the New York State Barge Canal. Several weeks ago the State engineer asked for bids on specifications which did not fit any of the standard cranes. A protest was entered at Albany by the association on the ground that it would cost the State many thousands of dollars to buy special equipment, while the equipment furnished on these specifications would not be better than standard equipment. If the State engineer accepts the association's specifications new bids probably will be asked for soon. About 50 or 60 cranes will eventually be required for the various cities through which the Barge Canal passes.

Crane manufacturers look for an active demand soon for cargo-handling cranes. New terminals are to be provided at Providence, R. I., Portland, Me., New London, Conn., Seattle and San Francisco, but the only city which has as yet taken bids is Providence. Inquiries for standard bridge cranes have been fairly numerous during the past 30 days, but many of these are for estimating purposes. One crane seller says that not more than 10 per cent of recent inquiries have resulted in orders.

The E. W. Bliss Co., Adams and Plymouth streets, Brooklyn, manufacturer of presses, dies, etc., is having plans prepared for a machine shop and a foundry near its ordnance works, foot of Fifty-third Street, to cost in excess of \$800,000, with equipment. The shop will be one-story, 80 x 280 ft., and the foundry, one-story, 80 x 240 ft., with three-story extension, 60 x 240 ft. The new buildings will be used for the manufacture of presses, auto parts, dies, etc. The installation will include three 50-ton and three 30-ton electric traveling cranes, and two 84-in. cupolas. The company is now completing the erection of a large addition to its torpedo works in this section, with total cost estimated at \$1,200,000.

The Derosa Corporation, Brooklyn, has been incorporated with a capital of \$250,000 by J. C. Danzilo, M. J. Hertel and A. Derosa, 255 Fourth Avenue, to manufacture automobile rims, wheels, etc.

The Automotive Development Co., 250 West Fifty-fourth Street, New York, has increased its capital stock from \$70,000 to \$100,000.

John Chatillon & Sons, 85 Cliff Street, New York, manufacturers of scales, have awarded contract to the Louis Weber Building Co., 171 Madison Avenue, for improvements to cost about \$4,000.

The Kip Tool Corporation, New York, has been incorporated with a capital of \$10,000 by A. Kipnis, P. and I. Olitsky, 2713 Avenue M, Brooklyn, to manufacture tools, etc.

The Kimberley Phonograph Corporation, 206 Broadway. New York, has been taken over by a new organization headed by Harry Kohn, 167 Smith Street, Perth Amboy, N. J., as treasurer, and Henry Birns, Roosevelt, N. J. The new company will establish a plant at Perth Amboy for the manufacture of a universal talking machine, and has leased a three-story factory building on Fayette Street for this pur-

pose. It is planned to commence operations in time the present works of the company on Church Street New York will be removed to the new location.

The American Locomotive Co., Paterson, N is used to posed of buildings and property, heretofore used in some tion with its local Cooke locomotive works, to the learning Flax Spinning Co., Paterson, and other interests.

The Hudson Metal Mfg. Co., 52 Hudson Street, Jersey City, N. J., has filed notice of change of name in the Page Mfg. Co.

The M. W. Kellog Co., 117 West Side Avenue Japes City. N. J., manufacturer of iron and steel pipe, etc., has closed negotiations with the City Commission for the purchase of about 40 acres of property at Droyer's Point, for a consideration of \$102,000. The site fronts on the Hackensack River, and will be used for the construction of a new works for the manufacture of iron and steel pipe, fittings, etc. It is said that the plant will cost over \$2,000,000, and give supplayment to about 2,000 men.

The Bijou Motor Appliance Co., Fifteenth Street, Hobeken, N. J., manufacturer of electrical specialties, has leased for a long period one of the buildings in the Hobeken terminal group used by the Government during the war, known as building D. It will be used for extensions in manufacturing.

The Hercules Machine &.Tool Co., Jersey City, N. J. has been incorporated with a capital of \$50,000 by R. K. Thistie P. O. Nieser and S. B. Howard, New York, to manufacture tools and machinery.

Fire, May 11, destroyed a foundry at North Bergen,  $\chi$  ) owned by John A. Roeblings' Sons Co., Trenton, N. J.

The Burgler Starter & Battery Co., East Orange, N J has been incorporated with a capital of \$50,000 by H. H. Picking, H. O. Geyer and E. R. Coburn, to manufacture electrical equipment.

The International Auto Sheet Metal Radiator Co. 355 Bloomfield Avenue, Bloomfield, N. J., has filed notice of organization to manufacture automobile radiators, with general repair works. Charles I. Potters, 275 Broad Street, Bloomfield, heads the company.

The Independent Lamp & Wire Co., 1733 Broadway, New York, with works at Weehawken, N. J., has acquired property on Runyon Street, between Hillside and Belment avenues, Newark, N. J., 260 x 580 ft., for a new four-story plant, designed to give employment to about 500 persons. Nathan Hofheimer is president.

The Howard Moore Co., Newark, N. J., has been incorporated with a capital of \$10,000 by Joseph Mehr, Newark Edward De Wyrall, Ridgefield Park; and H. M. Hansen, Jersey City, to manufacture metal products.

The Victory Piston Ring Co., 488 Mulberry Street Newark, N. J., has filed notice of organization. Merritt C Perkins, 286 South Street, heads the company

Ringel Brothers, 55 Rector Street, Newark, N. J., manufacturers of roofing specialties, etc., have leased a one-stoff building, 75 x 228 ft., on Twenty-first Street, near Clinton Avenue, Irvington, now in course of erection, for manufacturing extensions.

Kraeuter & Co., 583 Eighteenth Avenue, Newark, N. J. manufacturer of tools, are planning the erection of a new plant on property, about 15 acres, recently acquired on Burnett Avenue, Hilton, in the Irvington district. The plant will comprise about seven buildings, to be devoted to forge work, foundry, machine operations and general manufacturing. The buildings will average about 60 x 300 ft. Marshall Shoemaker, 207 Market Street, is the engineer.

Leiman Brothers, 160 Christie Street, Newark, N I-manufacturers of machinery, have purchased land opposite their machine works for extensions.

The Standard Electric Mfg. Co., 24 Scott Street, Newark, N. J., has leased a portion of the building at 126 South Street for manufacturing extensions.

The Adjustable Drop Light Co., New York, has been incorporated with a capital of \$25,000 by W. Klehe, H. Koenig and C. Capehart, Times Building.

The L. E. Waterman Co.. Broadway, New York, manufacturer of fountain pens, has purchased property on Peddle Street, near Johnson Avenue, Newark, N. J., and plans the erection of a six-story reinforced-concrete plant, 260 x 475 ft. The company is understood to be arranging plans for the employment of about 1000 persons at the new plant, and for the consolidation of a number of its works there.

The Franklin Motor Car Co., 1820 Broadway. New York has leased the third floor of the building now being erected by the Orteig Motor Co., on Sixty-third Street, near Amsterdam Avenue, as a service and repair establishment. The floor will provide 22,500 sq. ft. space.

Wappler Electric Co., 173 East Eighty-seventh Street New York, manufacturer of X-ray devices, etc., is arranged to increase its capital stock from \$750,000 to Baro for expansion. It recently acquired property on Harrs avenue, Long Island City, as a site for a three-story removed-concrete plant. R. H. Wappler is president.

The Maddaus Tool Corporation, New York, has been inrefported with a capital of \$60,000 by I, and J. W. Maddaus, and R Hoffman, 304 West Thirty-first Street, to manufacture tools and machinery.

Metry Ford & Son, Inc., New York, has been incorporated with a capital stock of \$650,000 by Gaston Plaintiff, representative in New York for the Ford Motor Co., 1710 Broadway. W. Bentley Crisp and Hugh T. Gordon. The company will be operated by Henry Ford, Detroit, and will manufacture tractors and farm implements.

S Noller, 410 Jackson Avenue, Long Island City, N. Y., is having plans prepared for a one-story machine shop, 25 x 100 ft., to be erected at Twelfth Street and East avenue.

imperty of the American Radium Co., 7 East Fortysered Street, New York, will be sold by Francis P. Garvan, Aliei Property Custodian, on May 27.

The Cutting & Washington Radio Corporation, New York, has been incorporated with an active capital of \$36,750 by W.C. Schmidt, F. and R. F. Cutting, 32 Nassau Street, to manufacture radio equipment.

The Kawakita Electric Corporation, New York, has been meroporated with a capital of \$200,000 by I. O. Pas, N. C. Sagl and E. D. Spunt. 15 Park Row, to manufacture motors, meters, etc.

The Borough Park Garage, Inc., 1434 Forty-ninth Street. Brooklyn, has had plans prepared for a two-story brick machine shop and service building, 40 x 100 ft., at Fourteenth Avenue and Thirty-ninth Street, to cost \$28,000.

The Superior Bearing Bronze Co., New York, has been marphrated with a capital stock of \$20,000 by A. Partman, A Baugerter and L. Guthell, 739 Home Street, to manufacture bronze, etc.

The International Steel & Ordnance Corporation, 50 Church Street, New York, has filed notice of change of name to the Gillespie Mfg. Co.

The Industrial Apparatus Corporation, Brooklyn, has been incorporated with a capital of \$10,000 by R. U. Bunker, G. M. Newsall and W. E. Tipple, 169 Eighty-fourth Street, in manufacture mechanical equipment.

The Mount Vernon-Long Island Engineering Corporation, Frequet, N. Y., has been incorporated with a capital of Mi.000 by L. M. Even, F. H. Bates and L. J. Neumann, I West 1920 Street, to manufacture motor vehicle parts, etc.

The Atlas Devices Co., New York, has been incorporated with a capital stock of \$25,000 by J. Klippel, Jr., E. Weegele and E. R. Gippert, 978 Forest Avenue, to manufacture oiling devices, sto

The American Can Co., 120 Broadway, New York, will boild a one-story extension to its plant at Elizabeth and Hawthorne avenues, Newark, N. J., \$0 x 108 ft., to cost to one

The National Vaporizer Corporation, New York, has been theoreprated with a capital stock of \$625,000 by C. F. Dike, R. P. Eugleston and J. T. Crowley, Mount Vernon, N. Y., to manufacture vaporizing equipment.

The Belza Electric Motor Co., New York, has been incerporated with a capital stock of \$250,000 by L. F. Schwartz, Jr. H. C. McCullum and H. C. Field, 34 Nassau Street, to manufacture motors, parts, etc.

S Hillekman, 199 Lafayette Street, New York, manufacturer of coffee urns, etc., is having plans prepared for his proposed two-story reinforced-concrete plant, 100 x 100 ft., at Note and Analde avenues, and Manly Street, Long Island

The Adier Mfg. Co., 271 Meserole Street, Brooklyn, manufacturer of gilding products, metal novelties, etc., will make extensions and alterations in its two-story plant, 50 x 100 ft., to cost about \$26,000.

The Darkins Foundry Co., Amsterdam, N. Y., has changed its name to the Perkins Machine & Foundry Co.

The Lewis Heater Corporation, Utica, N. Y., has been incorporated with a capital stock of \$150,000 by A. B. Maynani J. Rothstein and A. K. McCluney, to manufacture heaters heating equipment, etc.

The W. F. & R. Boat Builders, Inc., Kingston, N. Y., has increased its capital stock from \$10,000 to \$60,000.

The Patent Specialty Supply Co., Shushan, N. Y., has been incorporated with a capital stock of \$160,000 by F. C.

and J. R. Lovejoy and A. H. Stein, 140 Cedar Street, New York, to manufacture mechanical products

The Northern Garage Corporation, Saranac Lake, N. Y., has taken bids for a one-story machine shop and service building, 36 x 121 ft., on Elm Street, Malone, N. Y. to cost \$10,000. Ruser & Muller operate the company.

The Victory Tire & Rubber Co., 385 East 149th Street, New York, is planning for a two-story plant, 75 x 165 ft., on Gailroad Avenue, Asbury Park, N. J., to cost \$100,000

The Triangle Machine & Tool Works, New York, has been incorporated with a capital of \$6,000 by S. Rose, J. Brodsky and C. Zarem, 174 Centre Street.

The General Sheet Metal Co. 150 Broome Street, New-ark, N. J., has filed notice of organization to manufacture sheet-metal specialties. Nathan Berson, 82 Rose Street, needs the company.

## Buffalo

BUFFALO, May 19

The proposed arsenal of the Ordnance Department at Rochester, N. Y., to be established as a permanent plant in connection with similar works in different parts of the country, will comprise the present plant of the Symington-Anderson Corporation on University Avenue, used during the war for the manufacture of field and heavy artillery. It is said that the plant will be used in connection with the Government arsenal at Watervliet, N. Y. Another local plant of the company used as a forge works and known as plant B, is also being considered for Government service. The company is arranging to dispose of its plant, known as plant A, on Leighton Avenue, to private manufacturing interests M. H. Anderson is vice-president.

The Frazer & Jones Co., 351 West Fayette Street, Syracuse, N. Y., manufacturer of castings, etc., is completing plans for a brick and concrete addition to its foundry on Milton Avenue, to cost \$40,000.

A one-story car repair shop will be erected at East Buffalo, N. Y., by the Live Poultry Transit Co., 343 South Dearborn Street, Chicago.

The Cushing-Wellsville Co. Wellsville, N. Y., has been incorporated with a capital stock of \$20,000 by G. H. Hyde. E. E. Merson and C. Graves, to manufacture oil tanks, heaters, etc.

Josiah Anstice & Co., Inc., Rochester, N. Y., has been incorporated with a capital stock of \$150,000 by Josiah Anstice, 265 Culver Road, M. R. Anstice, 6 East Boulevard. Rochester; and J. F. Weller, Brighton, to operate a foundry

The Larrabee-Deyo Motor Truck Co., Binghamton, N. Y., has increased its capital stock from \$300,000 to \$500,000.

The M. & M. Tractor Co., Buffalo, has been incorporated with a capital stock of \$300,000 by C. M. Baldy, T. R. Wheeler and J. L. Kenefick, Marine Trust Building, to manufacture motor tractors, parts, etc.

The Ferguson Tire Corporation, Buffalo, has been incorporated with a capital stock of \$200,000 by L. H. Ferguson, J. N. Mead and J. W. Ellis, to manufacture auto tires.

Bids are being taken for a foundry building, 37 x 102 ft., with extension 24 x 24 ft., for the Bronze-Alumina Co., Buffalo, to be erected on East Delavan Ave. John H. Wilting, 257 Johnson Street, is manager.

The Board Corporation, Buffalo, has been incorporated with a capital stock of \$750,000 to manufacture paper products, and arrangements are being made for the establishment of a plant in Buffalo or vicinity. William D. Barron, Thomas C. Rowley and Fredk. Dobmeier, 1133 Marine Bank Building, are the incorporators.

The Carborundum Co., Niagara Falls, N. Y., is taking bids for a three-story tank building, 37 x 85 ft., of reinforced concrete.

The Geneva Cutlery Co. is finishing plans for additions to its plant at Torrey Park, which it will erect this spring at an estimated cost of \$100,000. D. H. Henry is president.

George & Bliss, Lake Placid, N. Y., will erect a motorboat factory, 95 x 100 ft., two stories, to cost \$25,000.

The Thompson-Field Mfg. Co., Rochester, N. Y., has been incorporated with a capital of \$50,000 by J. P. Thompson, G. F. Laube and C. Field, to manufacture carbon products.

The Atlas Erecting & Mfg. Co., Camden, N. J., has been incorporated with a capital of \$100,000 by Charles J. Ball and Charles S. King, to manufacture iron and steel products, steel shapes, etc.

The American Iron Works Co., Camden, N. J., has been

incorporated with a capital of \$50,000 by Herman Odlin, Audubon, and John B. Katz, Collingswood.

The Alpha Portland Cement Co., Easton Pa., is planning the resumption of operations at its different plants. Mill No. 3 at Martin's Creek has been reopened, and it is proposed to commence work at Mill No. 6, Catskill, N. Y., on May 12. It is also planned to resume production at the Jamesville, N. Y., plant and Manheim works at an early date.

# New England

BOSTON, May 19.

Machine-tool builders of Worcester and vicinity are receiving numerous orders for special types of the machines in which they specialize, and in a few instances there is brisk demand for strictly standard machines, or machines with slight modifications in the way of fixtures and accessories. This is particularly the case among the builders of grinding machines. The business received is mostly from manufacturers of automobiles and tractors or their parts.

Machine-tool dealers report a disposition on the part of manufacturers in metal lines to take advantage of the period of dull business to prepare for the rush of orders which they anticipate in the not distant future. Manufacturers are buying machinery to balance their equipment and to replace worn-out tools, but a chief motive seems to be preparation to utilize unskilled labor. Very few skilled workmen are idle

The Westinghouse Co. has decided to utilize its plant at East Springfield, Mass., acquired from the Stevens-Duryea Co., early in the war, for the manufacture of automobile parts, consisting of starting and lighting mechanism, with a prospect of adding small motors.

The American Steam Gauge & Valve Co., Boston, has taken over the property and business of the R. B. Phillips Mfg. Co., Worcester, Mass., manufacturer of screw machine products. The Phillips business was started and developed to large proportions by J. Verner Critchley, under the name of the Critchley Machine Screw Co., and several years ago was purchased from Mr. Critchley by Ralph B. Phillips of the American Steam Gauge and Valve Co. Complications arose later, involving the management and ownership of the two corporations, and these have now been adjusted, R. B. Phillips securing the control of both companies. In the meantime the R. B. Phillips Mfg. Co. has been in the hands of E. M. Hamlin & Co., Boston, bankers. It is understood that the change in control will have no effect upon the policies of the two companies.

The Osgood Bradley Car Co., Worcester, Mass., is in the market for machine tools and wood-working machinery, to the value of \$50,000, which are needed to balance up equipment for the manufacture of automobile parts. The company has been awarded a contract by the Standard Steel Car Co., Pittsburgh, for the manufacture of parts of that company's "Standard 8" passenger automobile. The parts are the rear axle complete, including the differential; the front axle complete, up to the draglink, and the seven-seater car bodies to the final finish. The Standard company is now having these parts made by outside companies. The Standard company and the Bradley company are closely affiliated. The plan is that the Worcester plant shall begin manufacturing these products in a comparatively small way, and gradually take over the entire output.

A one and one-half story boiler plant will be erected by the Goetz Silk Mfg. Co., Holyoke, Mass., in connection with other extensions and improvements in its plant on Summer Street, estimated to cost \$50,000.

The Presteel Mfg. Co., Bridgeport, Conn., has been incorporated with a capital of \$25,000 by Herman J. Storm, Andrew H. Carlson and Gustave A. Berg, to manufacture tools and machinery.

The Commercial Radio Co. of America, Providence, R. I., has been incorporated with a capital of \$100,000 by Frank E. Dyson, 43 Parkis Avenue, Ratcliffe G. E. Hicks and Thomas P. Giblin, Providence, to manufacture wireless apparatus.

The Holmes Electric Foundry Co., Worcester, Mass., is removing its plant from 19 Church Street to a building in Foster Square, to provide for increased capacity in its plant. The new quarters will provide about 8000 sq. ft. of manufacturing area, or approximately double that at the former location. New machinery and other equipment will be installed. Pehr G. Holmes is head of the company.

The Abendroth Foundry, Greenwich, Conn., has been acquired by Philip H. Mallory and associates for a consideration said to be about \$1,000,000. It is understood the new owners will make iron and steel castings.

The Liberty Knife Co., New Haven, Conn., has been in-

corporated with a capital of \$20,000 by Joseph Riccio and G. S. Maisto, New Haven, and Henry Di Rosas, Wallingford, to manufacture pocket knives and other hardware specialties.

The Gordon Electric Mfg. Co., Thomaston Avenue and Boyden Street, Waterbury, Conn., has been organized with a capital stock of \$52,600. Ira R. Seltzer is president and treasurer, and A. H. Post, secretary,

The Carlisle Cord Tire, Andover, Mass., a New York corporation, has increased its capital stock from \$500,000 to \$1,125,000. The company is planning for a general increase in production of its special cord tires for automobile use. A new factory will be located at Stamford, Conn.

The Wallace Barnes Co., 118 Wallace Street, Bristol, Conn., manufacturer of screw machine products, springs, etc., has taken bids for the erection of a one-story addition, 60 x 100 ft., to its plant.

The New Haven Hardware Specialty Co., New Haven, Conn., has been incorporated with a capital of \$20,000 by George S. Hawley, Gustave G. Fritz and Arthur W. Chambers, to manufacture hardware.

The Union Engineering Co., Hartford, Conn., has been incorporated with a capital of \$25,000 by Henry Vossler and Albert Mensel, Hartford, and John Schramm, West Hartford, to manufacture machinery and tools.

The George P. Clark Co., Windsor Locks, Conn., manufacturer of hand trucks, etc., will build a three-story, remforced-concrete addition, 60 x 195 ft. George P. Clark is president.

The Fellows Gear Shaper Co., Springfield, Vt., is building two additions to its plant, consisting of a two-story factory,  $144 \times 147$  ft., for manufacturing, and three-story office,  $42 \times 102$  ft.

W. D. Young & Co., Boston, have placed a contract for the erection of a manufacturing building of reinforced concrete, five stories and basement, 65 x 128 ft., at Brooking Mass.

The Frank Mossberg Co., Attleboro, Mass., has received estimates on a brick addition to its factory. It will be of saw-tooth roof construction, 60 x 240 ft., and cost about \$30,000.

The West End plant of the American Graphophone Co. Bridgeport, Conn., is to have a one-story addition, @1x3Mft., of reinforced concrete. It will cost \$6,000.

The Northway Motors Corporation, Natick, Mass, is planning for the erection of a new one-story plant, 200 x 250 ft

The U. S. A. Spark Plug Corporation, Springfield, Mass, has been incorporated with a capital of \$25,000 by C. I. Brosnan, Thomas J. Hisgen and R. J. Talbot to manufacture spark plugs and ignition specialties.

# Baltimore

BALTIMORE, May 1

The Standard Oil Co., Baltimore, will build a maches shop and garage, to cost \$20,000; a service station and office building to cost \$15,000; an engine and pumphouse to set about \$1,000, and other buildings at Hanover and Barset streets, Baltimore. It will be in the market for machine shop equipment at a later date.

Building permits have been issued to the Hess Steel Orporation, Loney's Lane and Pennsylvania Railroad, Railmore, for an additional building, one story, of frame and steel construction, 60 x 160 ft., to cost \$20,000.

The Union Shipbuilding Co., Fairfield, Baltimurs. Tinstall 220 horsepower in motors.

Fire May 13 wrecked the stove plant and foundry of Hutchinson Brothers, West Street and Burgundy Ales, Baltimore. The damage is estimated at \$25,000.

W. A. Wood, 501 Falls Road Terrace, Baltimore, formerly with the Crown Cork & Seal Co., has purchased the Wisson Distillery Co. plant, North Avenue and Gay Street, Baltimore; and it is reported that it will be remodeled for the manufacture of crimped metal corks, seals, and other cork products.

The Resilient Wheel Co., Oakland, Md., has been incorporated with \$4,000 capital stock to manufacture an automobile and motor truck wheel. The incorporators are Guvari J. Lee, H. Grove Duling, D. Cecil Ridings, Tracy O. Winters and Edward H. Sincell.

The Guyan Machine Shops, Logan, W. Va., is in the market for 150-hp. boilers, 3/2 to 11/2-in. boil cutters and storage battery locomotives.

The Morris Fertilizer Co., Wilmington, N. C., will build a \$450,000 plant near Wilmington.

The Express Spark Plug Co., Washington, D. C. be been incorporated with capital stock of \$500,000 by William

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D. Harrison, Edward J. Quinn and S. Gray Walters, Washington, to manufacture ignition apparatus.

MeAidle & Cooney, 8 East Lombard Street, Baltimore, have arranged for the immediate erection of a one-story plant, 50 x 100 ft., on the Key Highway, for the manufacture of steam valves, etc. The works will cost about \$23,000.

Temple Joyce, 415 East Twenty-fifth Street, Baltimore, is planning the erection of a three-story automobile service building and repair works to cost about \$150,000, including automobile.

The Bureau of Yards and Docks, Navy Department, Washington, has awarded contract to Post & McCord, 101 Park Avenue, New York, for a one-story motor testing building, 22 x 129 ft., pumping plant, magazine building, gangars, etc., and other work at the Government aircraft plant at Hampton Roads, Va., to cost \$519,500.

The Partridge Tractor Co., Kissimmee, Fla., has been incorporated with a capital of \$100,000 by W. W. Carson, E. L. Lesley and O. B. Webster, to manufacture farm tractors It will maintain its principal offices at Jacksonville.

The Charlotte Wagon & Auto Co., Charlotte, N. C., is panning a brick and steel plant, to provide about 30,000 sq. II. floor space for manufacturing.

J. C. Steele & Sons, Statesville, N. C., will receive quo-

Prices on lathes, small gear cutters, drill presses and salar tools are wanted by S. L. Lowman, Hildebran, N. C.

L. E. Calhoun, Colquitt, Ga., would like to secure prices and 50-hp. boilers and 40-hp. engines.

The Thompson Ice Co., Key West, Fla., will build a pant, installing 150-hp. boilers.

The Station Boller Works, Anniston, Ala., has been inorporated with \$20,000 capital stock by W. E. Grill and

Plans to install machinery for the manufacture of anchors. sinches and other marine supplies are being contemplated to the Marine Equipment Co., Mobile, Ala.

<sup>(2</sup> T. Lehman, Birmingham, Ala., is interested in prices as less in 150-hp. locomotive type boilers, and holsts.

# Pittsburgh

PITTSBURGH, May 19.

The Ohio Valley Mine Car Mfg. Co., Huntington, W. Va., recently incorporated with a capital stock of \$400,000, will have over the Ohio Valley Machine Works. Huntington, and has heretofore specialized in the manufacture of mine says and kindred equipment. The new company will operate this plant until its proposed new works at Ironton, Ohio, are ready for service. About five acres has been secured at this after location. M. E. Brown of the Miller Supply Co., Huntington, James W. Herron, president of the Ohio Valley Bank, Huntington, and M. J. Ferguson head the new company.

The Pittsburgh Seamless Tube Co., Pittsburgh, has inreased its capital stock from \$500,000 to \$5,000,000.

The Keystone Mechanical Products Co., Pittsburgh, has based property at 705 Liberty Avenue, consisting of two floors,  $20 \times 80$  ft., for a new establishment.

The Warrington Auto Construction Co., Pittsburgh, has bereased its capital stock from \$20,000 to \$50,000.

The machine shop and auto repair works of the Kossler Motor Sales Co., 117 Main Street, West End, Pittsburgh, was destroyed by fire, May 12, with loss estimated at \$15,000.

The American Dispensing Machine Co., Pittsburgh, has been incorporated with a capital stock of \$50,000. John G. Feters is treasurer.

The Cord Tire Corporation, Chester, W. Va., has been incorporated with a capital stock of \$50,000 by Jackson D. Comstock, and Henry B. Woodbury, to manufacture automobile tires.

The Atlas Jack Co., New Cumberland, W. Va., has been incorporated with a capital stock of \$25,000 by J. E. Carr and

The Morgantown & Kingwood Railroad, Morgantown, W. Va., will build a one-story shop addition. 40 x 120 ft., for engine construction and repair work.

Notice has been filed of the consolidation of the Pierce Packer & Supply Co., and the Producers' Supply Co., of Prinklin, Pa., under the name of the Franklin Valveless Engine Co. The capital stock of the consolidated concern is \$200,000 and the officers are Charles H. Sheasley, president; W.S. Pierce, vice-president, and J. A. Flood, secretary and treasurer.

The International Valve & Piping Co., Pittsburgh, Capitalized at \$100,000, has been incorporated to manufacture valves, fittings, piping, etc. Benjamin F. Harris, 6621 Wilkins Avenue, Pittsburgh; H. D. Wilson, 1121 Howard Road. Thornburg, and R. J. Wilson, Bellefield Dwellings, are among the incorporators.

The Machine Shop Equipment, Grove City, Pa., chartered to manufacture machinery, engines, etc., is capitalized at \$50,000. Its incorporators are John Nordstorm, H. G. Post, John, John G. and H. M. Carruthers.

## Detroit

DETROIT, May 19

A slight shortage of skilled labor and a pronounced dearth of unskilled men is handicapping manufacturers. Large industrial additions now being planned are held up pending the settlement of strikes in the building trades. Labor is growing more insistent in its demands and it is becoming difficult for employers to meet them. The local situation has been made more difficult by the influx of thousands of single men, attracted by high wages and shortage of workmen, who are attempting to cause trouble, having little in lose.

The housing situation has grown more acute, with thousands of families trying to find quarters. Local manufacturers and business men have subscribed \$2,500,000 toward a community housing corporation, which will have a capital stock of \$5,000,000 to aid workmen in building homes for themselves.

April building permits totaled 2015, the largest number in the city's history, although the estimated cost, \$4,641.731, has been surpassed several times.

The production of the Ford Motor Co. for the month of April was 69,547 cars. The company is now turning out more than 3000 cars per day.

Among the April building permits in Grand Rapids, Mich., is one for a \$40,000 addition to the Grand Rapids Brass Co.

The Champion Ignition Co., Flint, Mich., is now manufacturing speedometers and expects to turn out 400 a day by July.

The Charles B. Bohn Foundry Co., Detroit, is planning to erect a foundry in a Michigan city as soon as a site can be secured.

The Wolverine Forged Drill Co., Ypsilanti, Mich., has been incorporated with \$500,000 to manufacture high speed twist drills and kindred tools. George J. Crossman, Burt E. Cook, and Meyer M. Kell are the incorporators.

The United Broach & Machine Co., Detroit, has been incorporated with a capital stock of \$50,000 to manufacture broaches, tools, machinery and specialties. John Roy Brehmer, Louis Myers and Albert E. Sherman are the incorporators.

The Butt Welding & Mig. Co., Detroit, has been incerporated with a capital stock of \$10,000 by Duncan D. Button, Charles A. Dunn and Frederick W. Biederman to weld and braze metals and manufacture tools and machinery.

The Automobile Signal Co., Grand Rapids, Mich., has been incorporated with a capital stock of \$300,000 by Joseph Renehan, V. I. Cilley and I. J. Cilley to manufacture automobile accessories, tools and machinery.

The Pattern & Casting Co., Saginaw, Mich., has been incorporated with a capital stock of \$16,000 to manufacture wood and metal castings and to do jobbing machine work. Joseph C. Green, Detroit, Mason B. Giberson and Emil B. Horne, Saginaw, are the incorporators.

The Stampweld Co., Detroit, Mich., has been incorporated with a capital stock of \$10,000 to manufacture metal products, tools, etc. J. Frazier Whitehead, Thomas W. Burke and Cecil H. Taylor are the incorporators.

The plant of the Briscoe Carburetor Mfg. Co., which has been in operation in Jackson, Mich., will be moved to Pontiac, Mich. Frank Briscoe, formerly head of the Briscoe Motor Corporation, is president of the new concern. The l'ontiac plant will be 60 x 200 ft., and is expected to be completed within 60 days.

The Rickman Construction Co., Kalamazoo, Mich., has been awarded the general contract for the erection of an addition to the plant of the Independent Stove Co., Owosso, Mich., to cost \$50,000.

Percy Owen, president Liberty Motor Car Co., Detroit, has approved plans calling for a new factory in the Kercheval Avenue district, which will more than double its production. Its present plant, at the foot of Lycaste Avenue, in the Fairview section, is proving unequal to the demands for

its product. The Liberty company was organized several years ago.

The Michigan Stamping Co., Mack Avenue, near St. Jean Street, Detroit, will build a new one-story craneway extension, 40 x 250 ft., to cost \$30,000, including mechanical equipment.

The new building to be erected by the Advance Pump & Compressor Co., Battle Creek, Mich., will be one-story, 75 x 100 ft., and will be equipped as a foundry. A boiler plant addition, 35 x 35 ft., will also be constructed.

The Johnson Furniture Co., Grand Rapids, Mich., has had plans prepared for the erection of a one-story addition,  $80 \times 100$  ft.

The Dillon Steam Motors Corporation, Milan, Mich., has been incorporated in Delaware with a capital stock of \$1,000,-000 by Curtis F. Dillon, Frank A. Slivers and Allan G. Forsythe, Milan, to manufacture motors and other products.

The Muskegon Tool & Stamping Works, Muskegon, Mich., will soon commence the erection of a one-story foundry addition, 45 x 80 ft. L. T. Girdler is secretary.

Mitts & Merrill, Saginaw, Mich., manufacturers of machine tools, have taken bids for the construction of a new machine shop. An office building will also be erected. The entire work will cost about \$85,000.

# Milwaukee

MILWAUKEE, May 19.

On the basis of new business booked in the past week or 10 days, machine tool manufacturers discern a slight improvement in the situation. However, with the exception of milling machines, business has a quiet tone and is of a halting nature. The bulk of the demand comes from the Central West, where the automotive industries furnish the most prolific source of orders. Requirements of the Eastern states and the Pacific Coast are closely confined to small volume. The number of inquiries on file and coming in is believed to presage a very material buying movement as soon as conditions are regarded as favorable.

The Milwaukee Tank Works, 851 Kinnickinnic Avenue, Milwaukee, has plans by Leenhouts & Guthrie, architects, 424 Jefferson Street, for a new plant to replace the shops badly damaged by fire several months ago. The main building will be 100 x 200 ft. A definite decision to proceed with the project will be made within a short time. The new works may be erected on the present site or on a new site in the town of Wauwatosa. R. L. Bienenstock is president and general manager.

The Universal Shipbuilding Co., Sturgeon Bay, Wis., has started the erection of a one-story shop addition,  $50 \times 60$  ft., which will be the first of a number of buildings required to change the yard from a wooden to a steel ship plant. Walter E. Pommer is general manager.

Peters & Jacobs, Shell Lake, Wis., will erect a public garage and machine shop costing about \$10,000 complete.

The Lotex Tire Co. of Wisconsin has been organized with a capital stock of \$100,000 by Edward J. Yockey, Milwaukee, T. W. Meiklejohn, Fond du Lac, Wis., and others, to manufacture pneumatic tires and tubes. The factory will be erected at Fond du Lac, and the first unit will cost \$40,000, including equipment. B. F. Mehner, architect, Fond du Lac, is preparing plans and expects to take bids about June 1.

The Kenosha Wheel & Axle Co., Kenosha, Wis., incorporated with a capital stock of \$550,000, to take over and develop the business of the Whitcomb Tool & Machine Co., Kenosha, has perfected its organization by the election of the following officers: President, James A. Whitcomb: vice-president, Adolph Epstein; secretary-treasurer, Lloyd E. Wood; directors, Martin P. Winther and F. E. Dunnebacke.

The Stoughton Wagon Co., Stoughton, Wis., will install a 400-kw. steam generating unit, to replace a 150-kw. unit installed eight years ago. An addition to the power house is under construction.

The Maas Carbonator Co., 250 West Water Street, Milwaukee, has awarded the general contract to the Foster Construction Co., Caswell Block, for a new manufacturing plant, 60 x 100 ft., two stories, of reinforced concrete, brick and steel sash, at Twenty-second and Clybourn streets, to cost with equipment about \$45,000. The company manufactures self-contained carbonizing units for soda fountains and similar purposes. Adrian Fonteine is vice-president and general manager.

The Common Council. Black River Falls, Wis., has adopted tentative plans and specifications for improvements costing \$25,000 in the municipal hydro-electric power plant on the Black River. The principal item will be the installation of an additional waterwheel, vertical type, with a 400-hp. umbrella type generator. Bids will be taken within the next two weeks.

The Board of Public Works, Waterloo, When is taking bids for the installation of a 100-kw. generator, direct-ornected to a Corliss or uniflow type engine, in the municipal light and water plant. W. J. Hugo, Madron, Wis is consulting engineer.

The Morneau Sanitary Thermometer Co., Appleton, Wig. incorporated with an authorized capital stock of \$100,000, to manufacture patented temperature gages and containers and other medical and surgical instruments, is preparing to establish a factory in leased quarters. The organization was perfected May 15 by the election of the following officers: President, Dr. J. P. Morneau; vice-president, Fred E. Schlintz; secretary and treasurer, John Morran.

The Fabricated Ship Corporation, Milwauker, has made changes in its official personnel as the result of the disposition of the Newton interests to Samuel C. Coddington and associates. Ralph E. Newton, George C. Newton and Alfred S. Newton, formerly president, vice-president and purchasing agent, respectively, have retired. The new officers are: President, Nathaniel S. Robinson; vice-president and general manager, Samuel C. Coddington; second vice-president, Thomas J. Baker; secretary and treasurer, E. Fedler. The company was organized by the members of the Newton and Coddington Engineering companies, Milwaukee, to establish a new steel shipbuilding plant, which is now engaged in constructing seven vessels for the Government.

C. Milhaupt & Son, Appleton, Wis., machinists, have broken ground for a one-story shop addition, 50 x 90 ft., to be equipped for a general repair shop.

The Board of Education, West Allis, Wis., will receive sealed bids until May 24 for the erection of a new high school with a manual training department, estimated to cost \$300,000 in its entirety. The architects are Robert A Messmer & Brother, 1009 Majestic Building, Milwaukee.

The Grate-Cut Mfg. Co., Milwaukee, has been incorporated with a capital stock of \$10,000 to manufacture machines and appliances to grate, cut, slice and mince food products. The incorporators are Jacob L., Robert and Edward M. Bauer, all of Milwaukee.

The Florentine Appliance Co., Milwaukee, capital stock. \$50,000, has been incorporated by Edward J. Yockey, Gertrude G. Yockey and M. Brittell to manufacture patented articles, devices and appliances.

The Wisconsin Valley Sheet Metal Works, Wausau, Wis, is the name for the new factory established by F. Reineck. P. Krueger and associates May 1 in the former Hall garage building. Messrs. Reineck and Krueger conduct a sheet metal works at Madison, Wis. and the Wausau factory will be operated as a branch.

The Charles Abresch Co., 398 Fourth Street, Milwaukee, has acquired the three story factory building at 381-383 Fourth Street and is remodeling it into a machine shop and general manufacturing addition.

# Chicago

CHICAGO, May 19

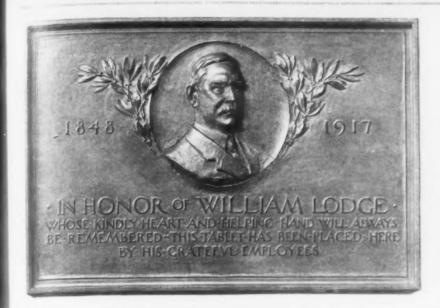
No large orders are reported, but a fair business is being done in lots of one, two or three machines. The demand is from miscellaneous sources and for many types of tools. The automobile industry continues to show activity. The Teeter-Hartley Motor Co., Hagerstown, Ind., is buying considerable equipment, including milling machines, grinding machines and hand, automatic and semi-automatic screw machines among other interests that have been in the market are ice-machine manufacturers; makers of labor-saving devices in the home, such as washing machines, electric irons and vacuum cleaners; printing press and safety razor manufacturers. Engine and turret lathes, radial drills, punching and shearing machines and boring mills have all been rather active. There continues to be a demand for punch presses required by small consumers.

In general, more business is being done this month that in April. One dealer secured orders during the first half of May exceeding the total business for the entire preceded month.

Some of the machinists who have been on a strike all Rockford, Ill., have returned to work without achieving their demands.

The Packard Motor Car Co. has taken a long term least on a tract of land at Thirty-seventh and Princeton streets. Chicago, where it will erect a two-story service station and factory to cost about \$600,000.

The Iron Mountain Co., a corporation recently organized to manufacture railroad supplies, has purchased 14 acres in East Ninety-fifth Street, Chicago, where it will begin work on a plant the ultimate cost of which will be over \$250.00. The first unit, which will be a high one-story structure equipped with electric cranes, will cost \$150,000.



The employees of The Lodge & Shipley Machine Tool Co. desiring to erect a suitable memorial to

#### WILLIAM LODGE

commissioned Clement J. Barnhorn, a sculptor, of Cincinnati, to design a bronze tablet. This tablet, reproduced in the accompanying illustration, is a portrait in relief of Mr. Lodge and has been placed on the wall in The Lodge & Shipley shop at Cincinnati

The Exide Battery Depots, Inc., of Philadelphia, has leased a factory in Thirty-fifth Street, between Shields and Stewart streets, Chicago.

August E. Bjork of Bjork Brothers, contractors and builders (Thicago, has commenced the construction of a one-story factory,  $70 \times 100$  ft., at 307-309 East Thirty-ninth Street, which he will lease to the Motor Specialties Corporation.

The Triangle Motors Co., manufacturer of the Scripps-Booth and Stephens automobiles, will erect a three-story building at 2221-23 South Michigan Avenue, Chicago, to cost \$75,000. The first floor will be utilized as a showroom and garage, the second floor for offices and storage and the third floor for a machine shop.

A. C. Woods & Co., contracting engineers, Rockford, Ill., plan to erect a structural steel fabricating plant in that

The Hartwell Mfg. Co., manufacturer of wholesale jewelry and novelties, Springfield, Ill., contemplates moving its plant. The company wants an inducement of \$100,000 to locate in some other city.

The Moline Pressed Steel Co., Moline, Ill., has increased its capital stock from \$100,000 to \$500,000.

The Frederickson Axle Co., formerly located in Milwaukee, Wis., has purchased a building in Benton Harbor, Mich., and is installing machinery in preparation for a resumption of operation.

The Ross, Weatherby & Jacobs Co., Benton Harbor, Mich., maker of electric lumber cranes, has rented the old quarters of the Electric Specialties Co. to provide room for a more extensive manufacture of its products.

The Dillon Steam Motors Corporation, Milan, Mich., has been incorporated with a capital stock of \$1,000,000. Incorporators include Curtis F. Dillon, Allan G. Forsythe and Frack A. Silvers, all of Milan.

The Colonial Tire & Rubber Co., Anderson, Ind., a recently organized company, is installing machinery in its faclery at the corner of Thirty-second and East Lynn streets.

The Bass Foundry & Machine Co., Ft. Wayne, Ind., has

The McNutt Motor Box Co. has leased the plant of the Brazil Motors Co., Brazil, Ind.

The Liberty Car Wheel Co., Hammond, Ind., has been improporated with a capital stock of \$5,000 to manufacture ar wheels.

 $\beta$  . Bolte, Davenport, Iowa, will erect a factory,  $80 \times 200$   $\beta$  , which will be utilized for the manufacture of farm trac-

The Central Machine Shop, 1234 Central Avenue, Minne-

Republic Flow Meters Co., 565 Washington Street, has taken bids for the construction of its proposed by meter manufacturing plant at Diversey Street and Oak-boulevard. It will be two stories and basement, brick the inforced concrete, 75 x 125 ft., and is estimated to cost with machinery and equipment. J. D. Cunningham

Joliet Forge Co., Joliet, Ill., has had revised plans for its proposed new one-story plant on Irving Street,

60 x 320 ft., to be used as a forge shop. The structure, with equipment, is estimated to cost \$125,000.

The National Enameling & Stamping Co., 346 West Kinzie Street, Chicago, has awarded a contract to F. A. Sleboldt & Co., 122 Washington Street, for the erection of its proposed new plant at Cortland Street and the Belt Railroad The structure will be two-story, 125 x 200 ft., and is estimated to cost \$75,000.

The Keokuk Power Transmission Co., Keokuk, Iowa, a Delaware corporation, has increased its capital from \$200,000 to \$800,000.

The Chicago Ferrule & Nut Co. Chicago, has increased its capital from \$40,000 to \$100,000.

The White Lily Mfg. Co., Davenport, Iowa, manufacturer of washing machines, will build a number of new additions to its plant to cost about \$150,000.

Effective July 1, the International Harvester Co., Chicago, will take over the plants and business of the Parlin & Orendorff Co., Canton, Ill., recently acquired by purchase. The works will be continued in operation for the production of agricultural implements.

The Ajax Forge Co., Chicago, has filed plans for the construction of a one-story brick addition to its plant at 2447 South Hoyne Avenue.

#### Cleveland

CLEVELAND, May 19.

A growing demand is noted for machine tools outside of the automobile field, from which most business has been coming this year, and the broadening of the field is viewed with considerable satisfaction by the trade. The largest order for screw machines reported for some time, 62 for the Columbia Phonograph Co., Bridgeport, Conn., was placed with a local manufacturer the past week. Scattering orders for screw machines have become more numerous and among those placed were three for the Garford Mfg. Co., Elyria, Ohio, two for the Domestic Electric Co., Cleveland, and several for single machines from the northern Ohio section.

The demand from the automobile field continues good and several small lot orders came to local houses the past week from the Cleveland and Detroit districts. The feature of the market is the fact that many inquiries which have been dragging along for some time have finally resulted in orders, or have become live prospects. It is understood that some manufacturers of large machine tools, including lathes, vertical boring mills, planers and slotting machines, are considering price reductions. Some builders of large tools have so far made no change in prices, although reports among the trade indicate there has been some shading.

The Van Dorn Electric Tool Co., Cleveland, has placed a contract with the Sam W. Emerson Co. for a four-story addition to its plant,  $60 \times 100$  ft.

The Supreme Motors Co., Warren, Ohio, is in the market for considerable machine tool equipment for a new plant to manufacture automobile motors. It recently erected a building, 100 x 100 ft., and has just placed a contract with the Crowell-Lundoff-Little Co., Cleveland, for another structure, 100 x 300 ft.

The Guide Motor Lamp Mfg. Co., 11400 Madison Avenue, Cleveland, will erect a one-story factory and office building, 60 x 180 ft.

The American Malleable Castings Co., Marion, Ohio, plans to take bids shortly for a foundry, 75 x 150 ft.

The Gartland Foundry Co., Toledo, Ohio, will enlarge its plant by the erection of a core room,  $80 \times 84$  ft.

The Flowers Welding Co., Canton, Ohio, will build an addition to cost \$8,000.

The Fate-Root-Heath Co., Plymouth, Ohio, has been incorporated with a capital stock of \$1,000,000. It succeeds the J. D. Fate Co., and the Root-Heath Co., which have been consolidated.

The National Steel Grave Vault Co., Galion, Ohio, will enlarge its plant by the erection of a brick and steel addition,  $50 \times 100$  ft.

A merger of several grave vault interests has been effected by the organization of the London-Orville Co., with a capital stock of \$1,000,000. It is stated that the interests in the new corporation include the Skahen Steel Co., Syracuse, N. Y.; the Security Vault Co., Orville, Ohio, and the London Grave Vault Co., London, Ohio. C. A. Albrecht will be president.

The Wagner Mfg. Co., Sidney, Ohio, is having plans prepared for a foundry.

The Custer Specialty Co., 26 North Ludlow Street, Dayton, Ohio, is erecting a three-story steel factory, 50 x 80 ft., for the manufacture of small gasoline and electric automobiles.

An inquiry has reached the Cleveland machinery trade from the Bard Mfg. Co., Waltham, Mass., for three automatic screw machines and an oil separator.

The Metal Parts Mfg. Co., Cleveland, is inquiring for an oil separator.

# Philadelphia

PHILADELPHIA, May 19.

The Champion Engineering Co., Kenton, Ohio, has appointed the Williams & Thomas Machinery Co., 829 Commercial Trust Building, Philadelphia, agents for its line of cranes in the local territory. R. F. Williams, president of the company, who has had extensive experience in crane sales engineering work, will have charge of sales.

The Philadelphia Roll & Machine Co., Twenty-fifth Street and Washington Avenue, Philadelphia, subsidiary of the Taylor-Wharton Iron & Steel Co., will build a one-story plant addition, 46 x 60 ft.

The Ajax Metal Co., 46 Richmond Street, Philadelphia, will make extensions and alterations in its shop on Allen Street, near Front Street, to cost \$3,000.

The Electro Dental Mfg. Co., Thirty-third and Arch streets, Philadelphia, has increased its capital from \$250,000 to \$350,000.

The Hurlock Brothers Co., 3436-38 Market Street, Philadelphia, is planning the repair of its cardboard works, recently damaged by fire with loss of about \$100,000, including machinery.

The Locomotive Crane Co., Philadelphia, Pa., has been incorporated in Delaware with capital of \$300,000 by E. M. MacFarland and F. R. Hansell, Philadelphia, to manufacture cranes

F. M. Venzie, 2610 Hutchinson Street, Philadelphia, has awarded contract to Barclay White & Co., 1713 Sansom Street, for a two-story auto service building and machine shop, 72 x 120 ft., and 36 x 70 ft., at 2626-28 Huntingdon Street, to cost \$15,000.

Henry Disston & Sons, Inc., Milnor and Unruh streets. Philadelphia, have filed plans for a second story brick addition to cost about \$15,000.

The Trenton Machine & Tool Co., Trenton, N. J., has been incorporated with a capital of \$10,000 by Albert Spruce, Dickinson and Olden avenues; William Clark and Charles W. Wennerstrom, to manufacture machinery, etc.

The MacLewee Electric Co., 4 Wood Street, Trenton, N. J., has increased its capital stock from \$100,000 to \$200,000. W. S. MacLewee is president.

Operations have been considerably curtailed at the Gloucester City, N. J., shipyards of the Pusey & Jones Co., and the working force materially reduced. No keels for new vessels have been laid for the past few months. The company plans to inaugurate normal operations for private interests as soon as the plant is released from Government control.

The Atlas Tire & Rubber Co., West State Street, Trenton, N. J., is having plans prepared for a two-story brick

and concrete plant on Enterprise Avenue, 90 x 250 ft., 150 cost \$100,000 with machinery. J. Osborne Hunt, 114 North Montgomery Street, is the architect.

The Trenton Auto Radiator Works, Perry Street, Trenton, N. J., is planning for the installation of new equipment to increase capacity at an estimated cost of \$25,000

Paul Heine, Lancaster, Pa., will build a one-story machine shop and automobile repair plant, 40 x 44 ft., to cost \$30,000, including equipment.

The Temple Malleable Iron & Steel Co., Temple, near Reading, Pa., is rebuilding its plant, destroyed by fire early this year. The new plant will provide increased capacity. It will include foundry, machine shop and general manufacturing buildings, and will cost about \$300,000. Headquarters are in the Harrison Building, Philadelphia.

The Gainaday Electric Co., Dormont, Pa., has been incorporated with a capital of \$50,000 by Charles B. Barton and associates, to manufacture electrical products.

The Victory Chain & Mfg. Co., recently organized in York, Pa., has been chartered with a capital stock of \$30,000 to manufacture chain and trimmings. Considerable machinery will be needed. The principal incorporators are Samuel M Horn, Charles H. Venus, S. Ralph Horn and Ralph Nance.

The Master Motor Co., Philadelphia, has been chartered with a capital stock of \$30,000, will need machinery for automobile and truck repair work The incorporators include Allen Scull, 4918 Osage Avenue, and M. F. Luckenbill, 6222 Chestnut Street.

The Lycoming Foundry & Machine Co., Williamsport, Pa., planning to increase its capacity, has given notice of an increase in capital stock from \$150,000 to \$1,000,000.

The Berroth, Pettit Corporation, Philadelphia, has been chartered to manufacture metal products, machinery, etc. The capital is \$5,000, and among its incorporators are H Walter Berroti, 320 West Logan Street, Philadelphia, and Samuel D. Pettit, Cranford, N. J.

## St. Louis

St. Louis, May 19

The Lake City Gin Co., Lake City, Ark., is reported in the market for about \$10,000 worth of cotton ginning machinery.

The Mexico Power Co., Mexico, Mo., will install a new electric generating unit to cost about \$40,000.

The Union Seed & Fertilizer Co., Helena, Ark., will reorganize with \$200,000 capital and will increase its oil mill plant equipment.

The Conservation Stove Co., Little Rock, Ark., F. W. Christner, president, has increased its capital stock to \$100,000 and will extend its capacity.

The Caddo Central Oil & Refining Co., Shreveport, La. capital stock \$15,000,000, E. Kirby Smith, president, will establish two refineries at Shreveport and one at Mooringsport, and will increase the capacity of its existing refineries to 15,000 bbl. per day. A fourth refinery of 5000 bbl. capacity will be erected at Lewis, La.

The St. Louis Boat & Engineering Co., St. Louis, in which Albert Ruemmeli, of St. Louis, and others are interested, will establish a plant for the building of cargo barges, selfpropelled and otherwise, for use in river traffic.

The legislature of Missouri has authorized the construction and equipment of a water trunk line in northern Missouri requiring pumping stations and other mechanical equipment. A. L. McCawley, Public Service Commission, Jefferson City, Mo., may be addressed for information.

The Southland Cotton Oil Co.'s plant, Jackson. Miss. has been burned with a loss of \$40,000 on machinery which will be replaced at once.

The West Point Oil Mill Co., West Point, Miss., is in the market for one 300-hp. Corliss engine and two engines 75 to 100 hp.

The B. & A. Mining Co., Flynn-Ames Building, Muskogee. Okla., is in the market for gas engines, boilers, compressors, skips and other machinery.

The Superior Oil Works, Vivian, La., H. H. Todd secretary, is in the market for oil refinery equipment, boilers, stills, pumps, wax plant machinery, etc.

The Mid-West Mfg. Co., St. Louis, formerly of Eleventh and Ferry streets, has closed a long term lease on the building at 1520-26 North Thirteenth Street. It manufactures tools and machinery specialties. Tim National Tool Mfg. Co., St. Louis, last week closed a lease for three floors of the building at Washington Avenue and Twenty-second Street. It will move from its present location, 2646-50 University Street, into its new quarters as soon as alterations are completed.

The Birmingham Steel Products Co., Birmingham, Ala., has been incorporated with a capital stock of \$15,000 by 11.11 Watkins and C. P. Noland, to manufacture iron and steel specialties.

The Atlantic Compress Co., Montgomery, Ala., is planning to increase the capacity of its plant from 1000 to 1500 takes of cotton per day, and will install new machinery for this purpose. The cost is estimated at about \$80,000.

The Station Boiler Works, Anniston, Ala., has been incorporated with a capital stock of \$20,000 by W. E. Grille and associates, to manufacture boilers, tanks, etc..

Clyde Huggins, Oxford, Miss., is planning for the erection of a new one-story machine shop and automobile repair

The McQuay Norris Piston Ring Co., St. Louis, has let a rentract to the Fruin Colnon Construction Co., Merchants Laclede Building, to erect a one and two-story reinforced concrete, piston ring plant at Cooper Street and Oak Hill railroad tracks. It will comprise five buildings, a machine shop foundry, garage, storage plant, and an administration including. The cost is estimated at \$150,000. M. Mummert, a care of owner, is the engineer.

# Indianapolis

INDIANAPOLIS, May 19.

The Munsey Wheel Co., Munsey, Ind., manufacturer of wagen and carriage wheels, is planning to remodel its works who a plant for the manufacture of automobile wheels. The manufacty of the plant will be enlarged and the force more ased.

The Park Tire & Rubber Co., Indianapolis, has filed plans for the erection of an extension to its plant.

The Studebaker Corporation, South Bend, Ind., will soon partitione the construction of a brick and steel addition to a plant to be equipped as a forge shop.

The Haynes Automobile Co., Kokomo, Ind., has perfected pains for extensions to its plant to increase the capacity to the post automobiles per year. The initial work will consist of a general manufacturing building, including forge department, four-stories, 150 x 500 ft. The forge section will embrace a total area of about 12,600 sq. ft., while other portions will be used for iron and steel working, assembling, triaming and kindred operations. A power house to generate 750 hp. will also be provided. The company has increased its capital stock from \$3,500,000 to \$5,000,000. A. G. Seiberling is second vice-president and general manager.

# Cincinnati

CINCINNATI, May 19.

Although local machine tool people are receiving practically no business from the railroads, many of them have made arrangements for exhibits of their latest machines at the joint convention of the Master Mechanics and Car lumbers to be held in Atlantic City next month. Experienced machine-tool salesmen who have visited railroad shops recently are of the opinion that equipment in these shops is in such a condition that it will of necessity have to be replaced before long. There are also indications that car uniders also may have to buy some machine tools soon, but of ar no lists have been put out by them.

Within the past few days scattered orders have been received from machine tool dealers on the Pacific Coast. Most of these were for lathes, although quite a number of particular and electric drilling and grinding machines were medical. Business from automobile manufacturers is still 1979 good, but is of not sufficient volume to take the output of different plants at the present time. Quite a number of tandard machine tools are being put in stock and unless with domestic and export business improves, this may become top-heavy before long. Export business is trailing dimer at about the same rate with a comparatively large summer of inquiries in hand that are slow in developing that had had been sufficiently all of these machines were rathered several months ago. Rumors are broadcast that the thinkendding industry will soon be in the market for machine tools but not much credence is given these reports.

I has been announced that the Salvage Board of the

pleted nitrate plant at Ancor, a Cincinnati suburb. Not very much machinery, except of a special nature, is involved.

The Pfaff Motor Car Co., Cincinnati, will build a large garage on Sixth Street, with which will be connected a mall order shop.

It is rumored that the Hobart Mig. Co., Troy, Ohio, intends to establish a branch plant at Dayton, Ohio, for the manufacture of coffee mills, meat grinders and other hardware specialties.

It is reported that the Recording & Computing Machines Co., Dayton, Ohio, will soon fit up part of its plant for the manufacture of talking machines.

The Ohio Metal & Mfg. Co., Dayton, Ohio, whose incorporation has been noted, will engage in the manufacturing and jobbing of metals, machinery and sheet metal products. Frank E. McBride is president.

Frank E. McBride is president.

The Dayton & Troy Automobile Co., Troy, Ohio, has increased its capital stock to \$150,000 and will enlarge its plant at that point.

The Borchers Automobile Co., Dayton, has had plans prepared for a four-story building estimated to cost \$175,000. Frank Hill Smith, Inc., Dayton, is the architect.

The Kinnear Mfg. Co., Columbus, Ohio, manufacturer of metal doors and other specialties, has been re-incorporated with \$1,300,000 capital stock. Nothing has been given out as to the company's present plans.

The C. A. S. Products Co., Columbus, Ohio, has increased its capital stock from \$75,000 to \$175,000. It manufactures stearing gears and other automobile specialties.

The Sunlight Creameries, Washington Courthouse, Ohio, will erect a cold storage plant,  $75 \times 300$  ft., three stories, of steel and concrete.

The Crystal Ice Mfg. Co., Columbus, Ohio, is making an addition to its plant on West Broad Street.

The Newark Stamping & Foundry Co., Newark, Ohio, has increased its capital stock from \$75,000 to \$100,000.

The A. T. Nye & Son Co., Columbus, Ohio, maker of stoves and ranges, has increased its capital stock from \$100,000 to: \$175,000.

It is reported that the Eames Arbor Press Co. will remove its plant from Chattanooga, Tenn., to Evansville, Ind.

The Wade Washing Machine Co., Nashville, Tenn., has been incorporated with a capital of \$10,000 by John M Wade and associates, to manufacture washing machines.

The Coalfield Coal Co., Coalfield, Tenn., is planning to rebuild its electric power plant recently destroyed by fire.

## Texas

AUSTIN, May 17

The Texas Gulf Refining & Pipe Line Co, will build an oil refinery at Laredo, to cost \$250,000, according to Charles A. Lindsay, an official of the company.

The Surface Foam Appliance Co., Tulsa, Okla., will build a plant at Ranger for the manufacture of an oil tank fire extinguisher. It will cost about \$250,000.

The Gulf Pipe Line Co. has purchased a site of 120 acres at Garland, upon which it will build an oil refinery. It is laying an 8-in, pipe line from the Ranger field to Garland The Consolidated Refiners & Producers Co., with a capital of \$2,000,000, has plans for the construction of a refinery at Ranger.

The Texas & Pacific Railroad will build shops at Eastland and make other improvements at that place at a total cost of about \$500,000.

The Arrow Refining Co. has purchased a site of 60 acres at East Waco upon which it will build an oil refinery to cost \$300,000.

The Houston Concrete Shipbuilding Co., Houston, plans to take over the plant of the Liberty Shipbuilding Co. and will immediately begin the construction of two concrete ships.

The South Houston Electric Co., South Houston, has been organized to generate electric light and power.

Amis Brothers, Hugo, Okia., will build a cold storage and refrigerating plant at Paris to cost \$30,000.

The new plant of the Mack Oil & Water Well Screen Co., Houston, recently organized, will be located near Magnolia Park, on a 10-acre site, and will consist of machine shop, foundry, forge and blacksmith shops and other buildings. It will specialize in the manufacture of oil well supplies. J. O. Mack is manager.

The Double Seal Ring Co., 320 Lake Street, Fort Worth,

has awarded a contract to Heck & Lightfoot, Fort Worth, for the construction of a new one-story plant, 75 x 180 ft., for the manufacture of piston rings and other metal specialties. C. R. Keith is manager.

# The Pacific Coast

SAN FRANCISCO, May 13.

Machine-tool dealers are optimistic as to the future, but the shops are not buying. Government offerings of secondhand machinery are undoubtedly affecting the market, notwithstanding the fact that not a great deal of this machinery is to be found on the Coast. The advertisements of the Government offering machines, in some cases as low as 15 per cent off list, make possible buyers of new machinery hesitate, but dealers feel that the machinery must have been abused and shrewd buyers are not attracted.

Farming equipment continues in excellent demand. Mining equipment is fairly active with a heavy call for second-hand equipment. Several elevators have been built or are contemplated throughout the Northwest, and milling machinery is active.

The optimistic attitude of lumbermen is indicated by the steps taken to rehabilitate sawmills and to make extensive repairs and improvements.

The Great Western Power Co., San Francisco, has received permission to issue \$6,000,000 in bonds and \$1,500,000 in preferred stock. The money is to be utilized in increasing the works now in operation and in building new hydroelectric plants.

The machine shops of the Crofoot Machine Co., Porterville, Cal., was destroyed by fire with a loss of \$9,000.

The Gilroy Machine Co., Oakland, is building a machine shop at Fourth and Peterson streets, at cost of \$2,000.

Charles Alsop, San Francisco, is building a machine shop for automobile repair work at Geary Street and Ninth Avenue at a cost of \$4,500.

It is reported the Coughlan and Wallace shippards, Vancouver, B. C., has been allotted contracts sufficient to keep the plants running until the end of 1920, with an approximate expenditure of \$10,000,000.

The Marine Repair & Construction Co., Portland, is entarging its ship repair plant and installing new equipment. In addition to repair work, it will build four ore and rock barges.

The Wallowa Marble & Granite Co., La Grande, Ore., has been incorporated, and will develop quarries in that vicinity. E. E. Amsden is president.

Swift & Co., Chicago, contemplate doubling the size of the present branch plant in Spokane. Three new cooling departments will be included. C. M. Thompson is manager.

The Sidney Roofing Co., Sidney, B. C., will make additions to its plant, to cost between \$125,000 and \$150,000. New machinery will be installed.

The Gray's Harbor Iron Works, Hoquiam, Wash., plans to immediately double the present capacity of its plant and install new equipment.

The Anderson Shipbuilding Co., Kirkland, Wash., will immediately convert its yard into a repair plant for steel and wooden ships. A new marine railroad, with capacity of 4000 to 5000 tons will be installed.

The Sprague River Lumber Co., Klamath Falls, Ore., will equip a sawmill with a daily capacity of  $25,000~\rm{ft.}$ 

It is reported that the Dickerson Engine Co., Salt Lake City, Utah, has been incorporated with a capital of \$1,000,000 by Solon Spiro, Jos. Lippman, Harry Lee, Arthur Dickerson and N. M. Ambrose.

# Canada

TORONTO, May 19.

The Howard Smith Paper Mills, Ltd., Montreal, will issue bonds amounting to \$1,500,000, of which \$1,000,000 will be issued immediately. The proceeds are to be utilized for extensions to its mills at Beauharnois, Que., and to provide additional working capital.

The Hoover Suction Sweeper Co., North Canton, Ohio, will establish its Canadian headquarters in Hamilton, Ont., where it will erect a plant. Heretofore it has had a small plant at Windsor, Ont., but this will be moved to Hamilton, where temporary offices at 20 Macnab Street South, have been secured. A site with a frontage of 600 ft., at the corner of Gage and First avenues, has been purchased and work will be started immediately on the erection of a series of factory buildings.

Frank L. Clark and C. C. Larson, engineers, Woodstock. Ont., are interested in a company which will convert the

saddlery factory at Walkerton, Ont., into a plant for the manufacture of iron and steel products, etc.

Bids are being received until May 27, by T is Church, chairman of the Board of Control, Toronto, for machine shop equipment, belt conveyor and appurtenances, etc.

Forest, Jackson & Forest, 222 Craig Street West, Montreal, have taken over the Canadian agency of the Caston Foundry & Machine Co., Canton, Ohio, manufacturer of portable cranes, etc.

The Regent Metal Goods, Ltd., Montreal, has been invorporated with a capital stock of \$75,000 by William E. Emerson and Herbert W. Allen, both of Buffalo, N. Y. Augusts E. Bregent, Montreal; James J. MacLennan, 2 Sultan Avenue, and John N. Black, 15 King Street West, both of Toronto, to manufacture machinery, implements, etc.

Furnival & Co., 631 Dupont Street, Toronto, will increase its manufacturing facilities to take in ash sifters, incutators, and other galvanized iron goods. It will erect an addition and purchase equipment, including sheet metal machinery, presses, etc. A. E. Furnival is president.

The Victoria Turbine Mixer Co., Ltd., Toronto, has been incorporated with a capital stock of \$100,000 by Walter A Sadler, 67 Yonge Street, Charles A. Couch, George Stevenson and others, to manufacture gasoline saving devices, else trical and mechanical equipment, etc.

The Wood Air-Tight Valve Co., Ltd., Toronto, has been incorporated with a capital stock of \$1,000,000 by Melvin G. Hunt, 28 Douglas Drive, David McLaren, Charles H. McArthur and others, to manufacture valves, automobile pressories, tools, etc.

The See & Smith Motors, Ltd., Toronto, has been incorporated with a capital stock of \$100,000 by Henry H. Davis, Room 25, 10 Adelaide Street, East, Edward H. Brower, Lawrence A. Landriau and others, to manufacture automobiles, trucks, engines, etc.

The Canada Tool & Engine Co., Ltd., Halifax, N. S. has been incorporated with a capital stock of \$200,000 by Lawrence A. Lovett, Frank B. A. Chipman and others, to manufacture machinery, engines, etc.

The Hawbolt Gas Engines, Ltd., Halifax, N. S., has been incorporated with a capital stock of \$100,000 by William L. Hall, H. M. Sabean, Anna L. Purcell and others, to manufacture gas engines, machinery, etc.

A by-law has been passed granting tax exemption to the Champion Spark Plug Co., Windsor, Ont., which will erest a \$250,000 plant and employ 100 men at the start.

The Sterling Rubber Co., Ltd., Guelph, Ont., will baild an addition to its plant at a cost of \$10,000.

The Empire Meter Co., Hamilton, Ont., will commune manufacturing operations at an early date in its plant at 14 North Bay Street. It has taken a year's lease of its present premises and proposes to erect a new plant during the year. The company will manufacture a meter invented by 8 J. Pocock, Hamilton.

The Barton Electric Co., Hamilton, Ont., has secured half of the building vacated by the Canadian Corborandum Co., East Barton Street, and will manufacture electrical appliances, etc.

T. J. Mulvihill, Arnprior, Ont., will build a garage and machine shop on Elgin Street to cost \$10,000.

Alfred Chapman, Harbor Commission Building, Toronto, is receiving bids for the erection of a manufacturing plant for the Canadian Ice Machine Co., 82 Chestnut Street.

The Northern Rubber Co., Guelph, Ont., will build a factory to cost \$135,000. James, Loudon & Hertzberg, Excelsion Life Building, Toronto, are the engineers.

The Chicoutimi Pulp Co., Chicoutimi, Que., will build a paper mill at a cost of \$375,000 and is in the market for pulleys, shafting, hydraulic presses, grinders, wet machines, centrifugal pumps and heating apparatus. J. E. Deslisle is the architect.

The St. Maurice Paper Co., Cap De La Madeleine. Queis having plans prepared for a machine shop to cost \$10,000 and model-maker shops to cost \$15,000. It has also started work on the erection of a pump house costing \$6,000. Mr. Harris is manager.

E. Bertrand, Cap De La Madeleine, Que., is erecting a factory and is interested in prices on a planer 6 to 8-in. capacity, round saw, band saw and tool all on the same table.

The Maple Leaf Mfg. Co., Ltd., Montreal, Que., has been incorporated with a capital stock of \$500,000 by Kenneth Molson, president, Montreal; W. B. McLean, vice-president. F. E. Mahone, secretary-treasurer, and Louis Livingstone, sales manager. The personnel is identical with that of the Machinery & Munitions Board, Ltd., which has been making munitions at Lachine and Sorel, Que. The Lachine plant has been taken over by the new company, which has also acquired the Windsor plant and general interests of the Merchant Merchant Company.

nard Motor Truck Co., Ltd., and will manufacture motor macks automobiles, boats, engines, motors, boilers, etc.

The Four Wheel Drive Auto Co., Ltd., Kitchener, Ont., has been incorporated with a capital stock of \$200,000 by Harvey J. Sims, George Bray, Alexander H. Miller and others to manufacture automobiles, trucks, machinery, etc. It will start work immediately on the erection of a plant.

The Welland Utility Mfg. Co., Ltd., Welland, Ont., has been incorporated with a capital stock of \$250,000 by George A Mitchell, Charles B. Wilson, Arthur J. J. Brennan and others to manufacture electrical appliances, machinery, tools, etc.

The Dominion Towing & Wrecking Co., Ltd., Midland, Ont. has been incorporated with a capital stock of \$250,000 by James Playfair, Douglas L. White, David S. Pratt and others to repair and build ships, boats, engines, etc.

The Measuregraph Co. of Canada, Ltd., Toronto, has been incorporated with a capital stock of \$250,000 by Richmond W. Hart, 1126 Traders Bank Building; Arthur L. Reid, Wilton Court: William W. Perry, Scarborough Junction, and others to manufacture measuring devices, etc.

The Vapor Car Heating Co. of Canada, Ltd., Montreal, has been incorporated with a capital stock of \$122,000 by Seeive P. Harriman, Frank A. Purdy, both of Montreal; Harold Fisher, Stanley G. Metcalfe and others, of Ottawa, to manufacture machinery, mechanical devices, implements.

The Eaton Toy Co., Ltd., Ottawa, has been incorporated with a capital stock of \$50,000 by Arthur E. Bywater, Frederick B. Eaton and others, to take over the business of the Eaton Toy Co., to manufacture machinery, internal combustion engines, vehicles, railroad equipment, etc.

The Metal Studios, Ltd., Hamilton, Ont., has been incorporated with a capital stock of \$50,000 by Samuel Nelson, Alfred Somerville, Joseph T. Payne and others to manufacture wire, machinery, implements, etc.

The Simplicity Sales Co., Ltd., Toronto, has been incorporated with a capital stock of \$100,000 by Robert B. Henderson, 67 Yonge Street, Arthur M. Boyd, 112 St. Clair Avenue: Allan A. Bain and others, to manufacture automobiles, accessories, tools, etc.

#### NEW TRADE PUBLICATIONS

Willing Cutters.—Ingersoll Milling Machine Co., Rockford, III. Bulletin 38, 39 pages, size 8½ by 11 in. Concerned with a line of inserted tooth milling cutters including various types of face milling cutters, end mills, interlocking side milling cutters, staggered side milling cutters, plain arbor mills, slab milling cutters, arbor mills in gang, profile cutters, and helical milling cutters. The catalog is profusely illustrated.

Tie Plates.—Illinois Steel Co., Chicago. Catalog. 74 pages, size 6 x 9 in. Each page shows a line drawing of a tie plate, gives its number and the gross weight per foot

Finished Brass Castings.—Doehler Die Casting Co., Brooklyn, New York. Catalog. Describes brass castings produced by a patented process. The castings are in a finished state and are delivered practically ready for assembling, the surfaces are smooth and uniform and, it is stated, require no further machining unless a high finish is required. Gears and small parts that have been made, are illustrated.

Steam Ash Conveyors.—American Steam Conveyor Corporation, Chicago. Catalog. Explains the company's steam ash conveyor system. The conveyor consists of a line of lipe into which ashes are fed and through which they are carried to a discharge point by the action of a jet of high velocity steam.

Chain Drives.—Morse Chain Co., Ithaca, N. Y. Catalog, A reprint of an article on chain drives by J. S. White, describing the use of chain drives for general power transmission purposes in cotton mills. Various chain drive installations are shown.

Forgings.—Camden Forge Co., Camden, N. J. Catalog, in pages, size 9 x 13 in. The pages are printed on one side only and show illustrations of the various classes of large heavy largings which the company is prepared to furnish.

Grinding Machinery.—Bridgeport Safety Emery Wheel Co., Bridgeport, Conn. Catalog C. Illustrations and descriptions of the company's line of grinding and polishing machinery and grinding wheels. The machines include direct connected and belt driven wet and dry grinders; swing frame, knife and edge, surface and disc grinders; plow, internal and cylindrical grinders; buffing lathes; etc.

Scoop Conveyors .- Portable Machinery Co., Passaic,

N. J. Folder. Describes a scoop conveyor for retail coal yards. Picture illustrates a variety of uses for the conveyor,

Wood Floor Blocks.—Republic Creosoting Co., Indianapolis. Folder, Concerned with a creosoted wood block for interior floors.

Machine Tools.—Graves Machinery Exchange, 50 Church Street, New York. Catalog. Specifications with illustrations of a stock of used machine tools and metal working machinery.

Electric Furnaces.—Electric Furnace Co., Alliance, Ohio, Booklet 5-B. Describes the principle of the Baily electric furnace for melting non-ferrous metals, and illustrates several installations and various types. Tables are presented showing records of production and low loss in metal when operating on yellow brass scrap, and percentage in metal loss, power consumption, etc., when melting phosphor bronze, also tests of a zinc cathode melting furnace. Comparative melting costs when using coke oil or electricity are also given.

Lathes.—Greaves-Klusman Tool Co., Cincinnati. Catalog. Detailed description with illustrations of betterments embodied in the company's design of lathes. Specifications and illustrations are also included of heavy quick change lathes and numerous lathe attachments.

Motor Brushes.—Corliss Carbon Co.. Bradford, Pa. Catalog 6. A description and price list of the company's line of carbon, graphite and metal brushes. A number of the different types of brushes are illustrated.

Rapid Computer.—Computer Mfg. Co., 25 California Street, San Francisco. Folder. Concerned with a device consisting of two dials and a reading arm for multiplying and dividing numbers. Logarithmic, trigonometric and the other problems to which a slide rule is applicable can also be solved on this device.

Reinforcement for Concrete Pavements.—Truscon Steel Co., Youngstown, Ohio. Pamphlet. Describes a road mesh and rib metal for reinforcing concrete roads and pavements. Two photographs showing the application of the material are included.

Cement Tile for Roofs.—Truscon Steel Co., Youngstown, Ohio. Pamphiet. Concerned with a flat cement tile to be used on roof purlins with standard spacing of 5-ft centers. The company's rib tile for sloping roofs is also described.

Electric Fans.—Sprague Electric Works, 527 West Thirty-fourth Street, New York. Catalog. Concerned with a line of direct and alternating current stand, wall and celling fans.

Ports, Valves and Slag Pockets.—Blair Engineering Co., 343 South Dearborn Street, Chicago. Catalog. Describes the company's ports, valves and slag pockets for open-hearth furnaces. Line drawings showing the construction of the devices are included.

Water Tube Bollers.—E. Keeler Co., Williamsport, Pa. Catalog. Describes cross drum water tube boilers. Detailed views of the boiler as well as numerous complete installations are shown. On the last two pages is described a standard type water tube boiler and a return tubular boiler made by this company.

Cements and Paints for Iron.—Smooth-On Mfg. Co., 570 Communipaw Avenue, Jersey City, N. J. Catalog 16. Concerned with a line of compounds for repairing leaks or breaks in castings, boilers, and tanks, and for screw thread joints, etc., also a paint for surfacing concrete. Corrugated gaskets for flanged joints for steam, water, oil, air or ammonia are included. Instructions with illustrations for the use of the various products are given.

Standard Buildings.—Truscon Steel Co., Youngstown, Ohio. Catalog. Views and descriptions of buildings constructed with the company's standardized units. Types described include 4, 3, 2, and 1-bay, also buildings with monitor and sawtooth roofs:

Structural Steel.—Belmont Iron Works, Twenty-second Street and Washington Avenue, Philadelphia. Catalog B. For export circulation in English, French and Spanish. Contains photographs of steel buildings of the company and other structures erected by it, tables in foot and metric units covering all classes of structural materials, and other information useful to enable companies to intelligently quote foreign inquiries.

Iron and Steel Products.—Robert Grant, Woolworth Building, New York, Catalog. Tabulation of semi-finished and finished iron and steel products, itemizing sizes and extras per 100 lb.; comparative tables of gages and decimal equivalents, weights and measures. The company's light structural semi-rigid transmission tower and standardized truss unit buildings are illustrated and described.

Industrial Engineering.—Frank D. Chase, Inc., 645 North Michigan Avenue, Chicago. Pamphlet, entitled "ideals and Convictions." Contains photographs of plants designed and constructed by the company, as well as a list of representative clients.

# Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carry-

ing stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of The Iron Age under the general headings of "Iron and Steel Markets" and "Metal Markets."

The proof of given to their convenience	and markers."
Iron and Soft Steel Bars and Shapes Per lb.	Steel Wire
Bars:	Base Price* on No. 9 Gage and Coarser
Refined iron, base price	Bright basic
Burden's H. B. & S. bar iron, base price6.30c	Galvanized annealed
Burden's best bar iron, base price	Coppered basic
Swedish bars, base price20.00c Soft Steel:	Tinned soft bessemer
% to 1% in., round and square	Regular extras for lighter gages.
1 to 6 in. x % to 1 in	Brass Sheet, Rod, Tube and Wire
1 to 6 in. x ¼ and 5/16	BASE PRICE
Rods—% and 11/16	High Brass Sheet20½c to 22¼c
Bands—1½ to 6 x 3/16 to No. 8	High Brass Wire
Beams and channels—3 to 15 in	Brass Rod
Angles:	
3 in. x ¼ in. and larger	Copper Sheets
3 in. x 3/16 and ½ in	Sheet copper, hot rolled, 16 oz., 23 1/2 c. to 26c. per h. base.
1½ x 2¾ in. x 3/16 in. and thicker	Cold rolled, 14 oz. and heavier, 1c. per lb. advance over hot
1 to 1¼ in. x 3/16 in	rolled.
1 to 1¼ in. x ⅓ in	Tin Plates
% x % x 1/s in	Bright Tin Coke—14x20
5% x 1% in	Grade Grade 'AAA' 'A' 80 lb\$8.30 \$8.05
½ x 3/32 in	Charcoal Charcoal 90 lb 8.40 8.15
Tees:	14x20 14x20 100 lb 8.55 8.30
1 x ½ in	IC\$11.30 \$10.05 IC 8.80 8.55
1½ to 2½ x ¼ in	IX 13.50
1½ to 2½ x 3/16 in	1XXX 17.00 15.50 IXXX 11.90 1165
3 in. and larger3.52c	IXXXX 18.75 17.25 IXXXX 12.85 12.60
	Terne Plates
Merchant Steel Per lb.	8-Lb. Coating 14x20
Tire, 1½ x ½ in. and larger	100 lb
Toe calk, ½ x % in. and larger	IX
Open-hearth spring steel	Fire door stock11.50
Extra cast steel	Tin
Special cast steel	Straits pig
	Bar
Tank Plates-Steel Per lb.	American pig, 99 per cent70c to 72t
14 in. and heavier	Lake Ingot
Sheets	Electrolytic
Pareets	Casting
Blue Annealed	Spelter and Sheet Zinc
No. 8 and 3/16 in	Western spelter
No. 10	Lend and Solder*
No. 12	American pig lead
No. 14	Bar lead
ATV. AV TITTE TO THE TENED TO T	Solder % & % guaranteed
Box Annealed—Black	No. 1 solder
Soft Steel Wood's	
C. R., One Pass, Refined, per lb. per lb.	*Prices of solder indicated by private brand vary according to composition.
Nos. 18 to 20	Best grade, per lb
Nos. 22 and 24	Commercial grade, per lb
No. 26	A 4
No. 28	Asiatic8%
No. 28, 36 in. wide, 10c higher.	Aluminum
Wood's Keystone Hammered,	No. 1 aluminum (guaranteed over 99 per cent
18-24 gage, 9%c; 26-28 gage, 10%c.	pure), in ingots for remelting, per lb316 to on
	Old Metals  The market is stronger. Dealers' buying prices and
Galvanized	
No. 14 Per lb. 5.60c	nominally as follows:
No. 165.75c	Copper, heavy and crucible
Nos. 18 and 20	
Nos. 22 and 24	
No. 26	Brass, neavy
No. 28	Heavy machine composition 130
No. 30	No. 1 yellow rod brass turnings.
No. 28, 36 in. wide, 20c. higher.	No. 1 red brass of composition turnings.
Corrugated Roofing, Galvanized	Lead, heavy
21/2 in, corrugations, 10c. per 100 lb. over flat sheets.	Lead, tea
	A1 A

